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COMPARATIVE EFFECTIVENESS OF ORGANIC FERTILIZERS AND GROWTH PROMOTERS ON POTATO GROWTH, DEVELOPMENT AND TUBERING

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Abstract

The article presents the results of field experimental studies of changes in growth, development, phenological stages, intensity of tuber accumulation and yield under the influence of different timings of application of biohumus, supercompost and growth stimulants, bioliquid and free fulvic acid.

The study's findings showed that a fractional application of biohumus and supercompost (via seeding and via nutrition) to potato crops grown on the soils of the river valleys of the Sevan basin has a more beneficial effect on their growth, development, and accumulation of tubers than a single application of these quantities (via seeding).

During the fertilizing potato fields, it is necessary to apply biohumus to the soil at the rate of 8 t/ha or 10 t/ha of supercompost (60% through sowing, 40% through nutrition in the bud formation phase) and during the growing season, apply external-root feeding by bioliquid (in the bud formation and flowering phases). As a result, the high-quality potato crop will be provided (390-400 c/ha), which in its turn will contribute to the improvement of the ecological conditions of Lake Sevan.

Keywords: Biohumus, supercompost, potatoes, growth stimulants, growth and development, tubering intensity

Introduction

Sevan is the only Transcaucasian large lake, which serves as a perspective reservoir for the strategic reserves of drinking water for Armenia and neighboring countries. The basin of Sevan, being one of the most extensive agricultural zones of the republic, differs somewhat from other agricultural regions in terms of its physical and geographical characteristics, geological structure, climate, soil, water, and vegetation aspects.

Sevan ecological state is mainly due to industrial and domestic wastewaters, livestock wastes pollution, as well as the occurrence of biogenic elements upon the leaching of mineral fertilizers and pesticides from the soil mass of agroecosystems related to erosion processes (Galstyan M.H. 2007, Galstyan M.H. 2018).

Upon the investigations it has been found out that 269 tons of nitrate, 144 tons of nitrite, 105 tons of oil product, 58 tons of phosphate and 2837 tons of fecal matters are annually dumped into Sevan Lake which are serious threats for the regular growth and development of fauna and flora of the lake at the same time causing biogenic contamination (eutrophication) in the lake (Movsisyan V.M. 2002).

Low rainfall in the basin, especially during the vegetation period, low content of organic matter in the soil, accumulated due to the influence of high air temperature and systemic winds plant residues, quickly mineralize and a small amount of humus accumulates in the soil. In such conditions, without the application of scientifically based technologies in the soil, provision of optimal reserves of nutrients and moisture, it is not possible to ensure a high and quality harvest from cultivated crops, especially potatoes, even with very good agrotechnics. In addition, it is impossible to simultaneously contribute to the improvement of the ecological condition of the waters of Lake Sevan, its fauna, and to ensure normal functioning of flora (Galstyan M.H. 2007, Galstyan M.H. et al 2020).

Therefore, the systemic and complex solution of the indicated problems is extremely important and relevant and follows from the requirements of the strategy of environmental protection and agriculture of the region, as well as priorities of ensuring food safety.

Material and methods

The main condition for the growth, development and increase of potato productivity, improvement of quality indicators, as well as reduction of cost is the provision of maximum productivity per unit area. While solving these problems the conditions of a healthy lifestyle should be taken into account. Along with many factors (the introduction of new high-yielding varieties, the use of effective methods of pest and disease control, the improvement of production and sales methods), the use of scientifically based fertilizers and growth stimulators, which provide high-yield at low costs, is of particular importance in terms of enhancing and protecting the environment.

Literature data clearly show that with intensive technologies to obtain high and stable yields of agricultural crops, including potatoes, a large amount of mineral fertilizers and other chemicals is used, which is confirmed by the studies of many domestic and foreign scientists (Galstyan M.H. 2003, Mineev V.G. 2004, Yagodin B.A. et al 1987). In this sense, the use of an alternative way of growing crops is of paramount importance.

Considering the importance of the problem, the task was set to study the effect of the amounts and methods of applying organic fertilizers (biohumus, supercompost) and growth stimulants (free fulvic acid, bioliquid) obtained by the latest methods on plant growth, development, tuber accumulation and the amount of the crop obtained in the lake hollows.

During the growing season, phenological observations, biometric measurements were carried out and the changes caused by the action of one or another soil improver on aboveground and underground organs, the accumulation of potato tubers and the amount of the crop obtained were calculated in order to implement the best option in agricultural production.

The field experiments were set up in the fluvial-terrace soils (Artsvanist community of Gegharkunik region) characteristic to the Sevan basin; here the prevailing part of potato plantations (82.0 %) is cultivated in the mentioned soils, while 18.0 % is cultivated in the leached black soils. [3]. The reaction (pH) of the soils of the experimental field ranges from 6.7-7.0, the amount of cations (Ca++, Mg++) absorbed by the soil layer is 25.3-30.3 mg/eq per 100 g of soil. The content of humus is 4.2%, easily hydrolysable nitrogen is weak (3.6 mg), mobile phosphorus is moderate (5.4 mg), exchangeable potassium is good (37.0 mg per 100 g of soil).

Field experiments were carried out in triplicate, the area of each variant in repetition was 30 m^2 with the following options:

1. Control (without fertilization),
2. Biohumus: 8 t/ha (via seeding) + bioliquid: 2 sprays,
3. Biohumus: 5 t/ha (via seeding) + 3 t/ha (via nutrition) + bioliquid: 2 sprays,
4. Biohumus: 5 t/ha ha (via seeding) + 3 t/ha (via nutrition) + fulvic acid: 2 sprays,
5. Supercompost: 10 t/ha (via seeding) + bioliquid: 2 sprays,
6. Supercompost: 6. t/ha (via seeding) + 4 t/ha (via nutrition) + bioliquid: 2 sprays,
7. Supercompost: 6 t/ha (via seeding) + 4 t/ha (via nutrition) + fulvic acid: 2 sprays.

The potato planting rate was 37.0 c/ha, further processing and harvesting was carried out in accordance with the agricultural rules adopted in the region. In one case, the full rate of equivalent amounts of biohumus and supercompost was given at a time, from seeds (options 2 and 5), and in other cases, fractionally, from seeds and with nutrition at the cocooning stage, as indicated on the diagram. Based on the nitrogen, phosphorus and potassium contents in the supercompost and biohumus available in these fertilizers the appropriate rates have been estimated, the content of NPK in supercompost and biohumus has made 1.56 and 2.3 % (N), 1.3 and 2.4 % (P_2O_5), 1.6 and 2.0 % (K_2O) respectively.

In the variants of the application of these organic fertilizers, a double spraying (extra root method) was also carried out with a growth-stimulating bioliquid or fulvic acid at the rate of 3 l/ha during the periods of bud formation and flowering. The agrochemical indicators of soils were determined by the universal methods given in the methodological manual for agrochemical analyzes published by B.A. Yagodin (Yagodin B.A. et al 1989), yield data were subjected to mathematical analysis, experimental error (Sx, %) and determination of the least significant difference ($LSD_{0,95,}$ c) through the method of analysis of variance (Dospechov B.A. 1973).

Results and discussion

According to the average data of the replicates of the field experiment, equivalent quantities of biohumus and supercompost and different terms of application, as well as growth stimulants bioliquid and fulvic acid, had a certain effect on the germination, growth and development of potatoes. Compared to the non-fertilizing (control) variant, both single and fractional application of biohumus and supercompost led to an acceleration of the germination of potato seedlings by an average of 3 (in the case of supercompost) and 5 days (in the case of biohumus) in all variants of the study. If in the variant without fertilization, potato tubers (planting material) germinated after 32-33 days, then in the variants with supercompost production - after 29-30 days, and in the variants with biohumus after 27-28 days.

The effect of biohumus and growth promoters is more obvious during the transition of potato phenological stages. If this effect is insignificant at the initial stages, then at the final stages (flowering and maturation) the effect of biohumus, bioliquid and fulvic acid is obvious: compared to the variants of application of supercompost and the same growth stimulants, the duration of vegetation of plants has decreased somewhat.

In other words, if it took potato plants 93–96 days from germination to maturity in the experimental version, 87–91 days in the supercompost and growth stimulator versions, then 83–86 days in the versions of both one-time and small applications of biohumus and growth stimulators, or the duration of vegetation was shortened by 10 days compared to the control and by 4-5 days compared to the equivalent options of applying supercompost and growth stimulators (Tab. 1).

So if it took 93–96 days for potato plants to grow from germination to maturity in the test version, 87–91 days for plants treated with supercompost and growth stimulators, and 83–86 days for plants treated with both one-time and fractional applications of biohumus and growth stimulants, respectively, the duration of vegetation was shortened by 10 days compared to the control and by 4-5 days compared to the equivalent options of using supercompost and growth promoters (Tab. 1).

This circumstance is also important in the sense that households will get the opportunity to collect and store the potato crop without losses, as during potato harvesting in the mountainous regions of the republic, including the Sevan basin, there are frequent rains and wet snow.

In the course of the studies, it was revealed that in the versions of the one-time and fractional application of biohumus and supercompost, as well as bioliquid and fulvic acid, the plants grew more lushly compared

to the control, had a dark green color, greater branching of the stems and provided a dense leaf mass.

If in the variants of a single application of equivalent doses of biohumus and supercompost, the height of the plants increased by 11.0 and 7.4 cm, the number of stems by 2.6 and 3.4 cm, respectively, compared with the control, then in the variants that received the same doses, when carried out with growth stimulants, plant height increased by 4.1-4.3 cm with fractional application of biohumus and by 3.4-3.7 cm with the use of supercompost and growth stimulants (Tab. 1).

Table 1

Effect of organic fertilizers and growth promoters on potato phenological phase transition, above ground mass and stolons (average data 2020-2022)

Variants		Control (without fertilization)	Biohumus: 8 t/ha (via seeding) + bioliquid: 2 sprays	Biohumus: 5 t/ha (via seeding) + 3 t/ha (via nutrition) + bioliquid: 2 sprays	Biohumus: 5 t/ha ha (via seeding) + 3 t/ha (via nutrition) + fulvic acid: 2 sprays	Supercompost: 10 t/ha (via seeding) + bioliquid: 2 sprays	Supercompost: 6. t/ha (via seeding) + 4 t/ha (via nutrition) + bioliquid: 2 sprays	Supercompost: 6 t/ha (via seeding) + 4 t/ha (via nutrition) + fulvic acid: 2 sprays
N		1.	2.	3.	4.	5.	6.	7.
Number of stolons/pcs		10,5 ± 0,2	16,8 ± 0,4	17,5 ± 0,3	17,2 ± 0,3	15,2 ± 0,2	16,4 ± 0,4	16,7 ± 0,3
Weight g/crop	Leaves	72 ± 3	160 ± 4	185 ± 4	170 ± 5	170 ± 3	162 ± 6	164 ± 5
	Stems	200 ± 5	340 ± 8	375 ± 5	368 ± 4	345 ± 6	369 ± 3	371 ± 4
Number of stems		3,5 ± 0,9	6,1 ± 0,2	7,8 ± 0,3	7,6 ± 0,3	6,0 ± 0,5	6,9 ± 0,3	7,2 ± 0,4
Height of crops (average data)		45,2	56,2	58,0	57,3	52,6	54,0	53,4
From seedling (day)	Extinction of tops (average data)	96	83	85	86	87	91	90
	Flowering (average data)	59	51	52	54	54	57	55
	Bud formation (average data)	39	37	36	35	37	38	37
The emergence of seedlings to the surface (finish, average data)		6/06	1/06	1/06	30/05	3/06	3/06	3/06

From the data of the same table it can be seen that similar changes were observed in the weight mass of stems and leaves and the number of stolons. Everywhere, compared with the unfertilized variant, the mass of stems increased by 140-171 grams, leaves by 88-98 grams, and the number of stolons by 4.7-7 in the variants that received organic fertilizers and growth stimulants. At the same time, the research results showed that the fractional application of equivalent doses of biohumus and supercompost had a more favorable effect on the above growth indicators, the development of potatoes, aboveground and underground organs, as a result of which, providing better conditions for the accumulation of potato tubers and increasing the number of crops compared to with a single application (Tab. 2).

In the course of research, comparing the effect of bioliquid and fulvic acid growth stimulants on the growth, development and accumulation of potato tubers, it is clearly seen that bioliquid, both biohumus and supercompost, had a more beneficial effect than fulvic acid in equivalent doses. If the increase in potato yield was 202.0 c/ha and 199.0 c/ha or 102.0 and 100.5% on the background of biohumus and supercompost, under the influence of radical nutrition with bioliquid, compared with the control, then on the background of the same fertilizers, the increase in yield in the variants, the use of fulvic acid was 166.0 c/ha (83.8%) and 189.0 c/ha (95.5%), respectively. As a result of one-time application of biohumus and supercompost, if the average rate of tuber accumulation per day from bud formation to maturity was 9.1 and 8.7 grams, respectively, then in fractional applications of the same doses, it was 10.5 and 9.8 grams.

As can be seen from the data in the table, in the variants of a single and fractional application of biohumus, compared with similar doses and terms of applying supercompost, the stimulating effect of biohumus on the formation of stolons and potato tubers, as well as the intensity of tuber accumulation was revealed, which undoubtedly contributed to an increase in yield (Tab. 2).

Table 2

Effect of organic fertilizers and growth promoters, by phenological phases on tubering and average yield (2020-2022)

Additional yield	%	-	65,7	102,0	83,8	72,7	100,5	95,5			
	c/ha	-	130	202,0	166,0	144,0	199,0	189,0			
Average yield, c/ha (2020-2022)		198,0 ± 3,0	328,0 ± 4,0	400,0 ± 6,0	364,0 ± 4,5	342,0 ± 5,0	397,0 ± 5,6	387,0 ± 4,8	2.9	7.4	
From bud formation to extinction of tops	average tubering of the day	6,2	9,1	10,5	10,2	8,7	9,8	9,6			
	day	57	46	49	51	50	53	53			
Weight of tubers by development stage, g	extinction of tops	418,8 ± 6,0	487,9 ± 4,5	585,9 ± 5,0	590,1 ± 4,5	505,1 ± 4,5	590,9 ± 5,45	578,6 ± 6,0			
	flowering	288,0±4,0	325,0 ± 5,0	340,0 ± 3,0	339,0 ± 4,0	349,0 ± 3,5	338,0 ± 5,0	340,0 ± 5,5			
	bud formation	65,4 ± 5,0	69,3 ± 6,0	71,4 ± 5,5	69,9 ± 3,5	70,6 ± 2,5	71,5 ± 3,0	69,8 ± 5,5			
Variants		Control (without fertilization)	Biohumus: 8 t/ha (via seeding) + bioliquid: 2 sprays	Biohumus: 5 t/ha (via seeding) + 3 t/ha (via nutrition) + bioliquid: 2 sprays	Biohumus: 5 t/ha (via seeding) + 3 t/ha (via nutrition) + fulvic acid: 2 sprays	Supercompost: 10 t/ha (via seeding) + bioliquid: 2 sprays	Supercompost: 6. t/ha (via seeding) + 4 t/ha (via nutrition) + bioliquid: 2 sprays	Supercompost: 6 t/ha (via seeding) + 4 t/ha (via nutrition) + fulvic acid: 2 sprays	Sx, %	$LSD_{0,95}$, c	
N		1.	2.	3.	4.	5.	6.	7.			

Thus, the fractional application of equivalent amounts of biohumus and supercompost (via seeding and via nutrition) to potato seedlings grown on the soils of the river valleys of the Sevan basin, has a more beneficial effect on the growth, development of potatoes, the intensity of tuber accumulation and the yield, than a single application of these fertilizers (via seeding).

Compared to equal dosages of biohumust and supercompost the rate of 6 l/ha of growth-stimulating biofluid with foliar nutrition produced a larger yield increase (10.0-37.0 q) than the same rate of free fulvic acid.

When feeding potato crops cultivated in the high-mountain zone, it is necessary to add biohumus to the soil at the rate of 8 t/ha or 10 t/ha of supercompost (60% of sowing, 40% of nutrition in the bud formation phase). and during the growing season, at the stage of cocooning and flowering: foliar top dressing with growth-stimulating bioliquid at the rate of 3 l/ha.

The use of this technology will increase the yield of potatoes, as well as improve the ecological state of Lake Sevan and its environment.

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ECONOMIC SCIENCES

MARKETING STRATEGY AND ITS ROLE IN ORGANIZATION DEVELOPMENT

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МАРКЕТИНГОВАЯ СТРАТЕГИЯ И ЕЕ РОЛЬ В РАЗВИТИИ ОРГАНИЗАЦИИ

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Abstract

This article explores the key role of marketing strategy in the development of an organization. This article explores the key role of marketing strategy in the development of an organization. The author considers the essence of the concept of the product life cycle and its stages. The author of the article emphasizes that the marketing strategy must be dynamic and flexible, able to adapt to changes in the market environment. As a result, the article comes to the conclusion that the marketing strategy plays a significant role in achieving the success of the organization and stimulating its development.

Аннотация

Данная статья исследует ключевую роль маркетинговой стратегии в процессе развития организации. Данная статья исследует ключевую роль маркетинговой стратегии в процессе развития организации. Автора рассматривает сущность понятия жизненного цикла товара и его этапы. Автор статьи подчеркивает, что маркетинговая стратегия должна быть динамичной и гибкой, способной адаптироваться к изменениям рыночной среды. В итоге, статья приходит к выводу, что маркетинговая стратегия играет существенную роль в достижении успеха организации и стимулировании ее развития.

Keywords: marketing strategy, organization, development, market environment, product life cycle

Ключевые слова: маркетинговая стратегия, организация, развитие, рыночная среды, жизненный цикл товара.

Жизненный цикл товара состоит из этапов, каждый из которых требует от предприятия соответствующей стратегии и тактики рыночного поведения. От момента зарождения идеи о товаре и до запуска его в производство огромное значение и содержание работы маркетинговой службы предприятия заключаются в том, чтобы постоянно «подпитывать» продвижение товара разнообразной рыночной информацией.

Итак, возникла идея товара.

Какими же должны быть первые шаги маркетолога? Нужен ли потребителю такой товар и как рынок примет его? Если ответы положительные, начинается воплощение идеи в эскизный проект.

Известно более 50 методов поиска новых идей [4, с.76]:

- «мозговая атака» и ее вариации (классическая, анонимная, деструктивная, конструктивная, метод «а также...», техника творческого сотрудничества);
- конференция идей (конференция идей гильде, метод 635, дискуссия 66);
- синектика (классическая, синектическая, визуальная);
- метод контрольных вопросов;
- метод морфологического анализа,
- метод коллективного блокнота;
- опрос с помощью карточек;
- метод словесных ассоциаций и др.

С учетом того, что на ЖЦТ непосредственно влияет маркетинговая деятельность торгового предприятия, то считаем целесообразным рекомендовать формирования данных стратегий в зависимости от стадии ЖЦТ и стратегических зон товаров предприятия в матрице БКГ.

Торговым предприятиям целесообразно использовать следующие стратегии: атакующая, оборонительная, стимулирующая и отступление. Атакующая стратегия предполагает активную, агрессивную позицию товаров в товарном портфеле предприятия и преследует цель завоевать и расширить его долю в нем.

Для ее реализации необходимо использовать следующие маркетинговые мероприятия [2, с.63]:

- закупка больших партий данных товаров различных моделей;
- установление надежного контроля за всеми источниками закупки, чтобы была возможность систематически оценивать новые предложения и принимать лучшие из них;
- сосредоточение на предприятии достаточного запаса данных товаров, чтобы полностью исключить случаи, когда товаров, которые требуются покупателю, нет в наличии;

- своевременное снижение цен для привлечения нового контингента потребителей;

- сохранение давления рекламы, элементов мерчендайзинга, которые направлены на формирование предпочтений к бренду [6, с.20].

Оборонная стратегия предполагает удержание позиции товаров в товарном портфеле и сохранение их доли в нем.

Для ее реализации необходимо использовать следующие маркетинговые мероприятия: учет запросов потребителей определенного сегмента рынка, закупка более конкурентоспособных моделей товаров, проведение гибкой ценовой политики, совершенствование послепродажного сервиса, сохранение давления элементов мерчендайзинга.

Стимулирующая стратегия предполагает поддержку позиции товаров в товарном портфеле путем стимулирования спроса покупателей.

Для ее реализации необходимо использовать следующие маркетинговые мероприятия: использование гибкой системы скидок, стимулирование сбыта, проведения интенсивной рекламы, повышение сервисной поддержки товаров.

Стратегия отступления предполагает извлечение краткосрочной максимальной выгоды от реализации товаров с учетом того, что спрос на них постоянно снижается. Предприятиям необходимо уделить внимание снижению цен, проведению распродажи товаров и формированию потребителей об этих событиях, или закупке моделей разновидностей товара с новыми, качественными характеристиками [1, с. 26]. Менеджеры по рекламе должны спрогнозировать динамику спроса и пересмотреть, при необходимости, стратегию рекламной деятельности в соответствии с изменением рыночных факторов.

Жизненный цикл спроса на товар можно разделить на несколько этапов:

• первый - рождение спроса при выведении товара на рынок;

• второй - рост спроса и постепенное насыщение рынка;

• третий - этап зрелости, когда примерно 50 % потенциальных покупателей уже приобрели товар;

• четвертый - резкое падение спроса вследствие почти полного насыщения рынка [3, с.22].

На первом этапе происходит коммуникативное ознакомления потребителей с фирмой и ее товарами (если фирма впервые выступает на рынке) или с новым товаром уже действующей фирмы. На рынок выводятся одна-две самые перспективные модели.

При этом, для обеспечения необходимого уровня спроса, применяют такие модели коммуникационного маркетинга:

- интенсивный маркетинг - полезный, когда потребители еще не имеют информации о товаре, а тех, кто о товаре знает, не пугает его высокая цена; на этом этапе всегда существует высокая конкуренция, поэтому у потребителей необходимо выработать приверженность к товару, что требует весьма значительных затрат на рекламу;

- выборочное проникновение - используется, когда емкость рынка невелика, а конкуренция незначительна, поэтому и незначительные расходы на рекламу;

- широкое проникновение целесообразно тогда, когда рынок имеет большую емкость, но высокая цена не по карману большинству потенциальных покупателей; острая конкуренция заставляет снизить себестоимость товарной продукции и предусматривает своеобразную «войну цен»; такая стратегия требует значительных затрат на рекламу.

На втором этапе жизненного цикла, в период роста спроса, конкуренция усиливается в связи с тем, что выведенный на рынок товар начинает вытеснять товары конкурентов. Конкуренты активизируют свое противодействие, разрабатывая аналогичные товары или даже копии.

Для завоевания преимущества в конкурентной борьбе необходимо выводить на рынок новые типы и марки товаров, улучшать ценовые и качественные показатели, выходить с товарами на новые сегменты рынка. Все это сопровождается активной коммуникационной политикой: стимулированием сбыта в виде сезонных скидок и общего снижения цен, применением активной рекламы.

Третий этап - зрелости - характеризуется тем, что на рынок выводится весь ассортимент товара. При этом учитывается тот факт, что более 50% потребителей уже перешли к разряду покупателей и стали владельцами товаров [5, с.8]. Рекламная деятельность направляется на демонстрацию рентабельности покупки, информирование о льготных условиях приобретения товаров и высоком уровне сервисного обеспечения. Расходы на рекламу снижаются, и финансирование коммуникационной политики перемещается в сферу стимулирования посредников и системы личной продажи.

На четвертом этапе происходит насыщение товарного рынка и падение спроса. Продажа товара осуществляется за счет повторных покупок или почти отсутствует. В заданном сегменте рынка остаются лишь товары, которые имеют стабильный спрос. Резкое снижение цен и распродажа товара дают эффект расширения круга потребителей и покупателей. Для этого этапа характерен высокий уровень издержек на рубричную рекламу (то есть объявлений о распродажа товара по сниженным ценам и купонов, которые дают право получить скидки).

Рынок продавцов: на первом этапе почти отсутствует, на втором - растет (вместе с ростом конкуренции), на третьем - большой, на четвертом - начинает уменьшаться.

Рынок потребителей: на первом этапе рынок потребителей - это отдельные сторонники определенной торговой марки; на втором - массовый; на третьем, когда охвачено почти 50 % потенциальных потребителей, - уменьшается; на четвертом - почти нулевой [1, с.73].

Особый взгляд необходимо обратить на различие понятий «потребители» и «покупатели». Потребители или аудитория потребителей - это потен-

циальные покупатели определенного товара, на которых рассчитано влияние всех средств маркетинговых коммуникаций с целью убеждения и стимулирования их к совершению покупки.

Покупатели - это категория потребителей, которые под влиянием маркетинговых средств совершили покупку товара [2, с.65]. При этом различают первичных покупателей, то есть тех, кто приобрел товар впервые, и вторичных покупателей, совершивших покупку конкретной торговой марки или товара во второй раз, в третий раз и т.д.

Объем продажи:

- на первом этапе - низкое;
- на втором - быстро растет;
- на третьем - медленно растет;
- на четвертом - низкий или нулевой.

Уровень цены: на первом этапе - высокий или низкий в зависимости от стратегии маркетинга; на втором - чуть ниже; на третьем - низкий и на четвертом - самый низкий.

Каждому этапу жизненного цикла товара соответствует определенная стратегия и цели маркетинговых коммуникаций:

- на первом этапе - привлечение внимания потребителей к товару или торговой марки;
- на втором - продвижение товара, привлечение потребителей улучшением качества товара, условиями продажи и наличием современной системы сервиса;
- на третьем - активное продвижение товара, обращение внимания потребителей на преимущества товара перед аналогичными товарами конкурентов;
- на четвертом - продвижение товара через посредников и систему личной продажи.

В соответствии со стратегией маркетинговых коммуникаций каждому этапу жизненного цикла товара присуща и соответствующая стратегия рекламной деятельности:

- на первом этапе - создание информированности о фирме, торговой марке и товаре;
- на втором - создание приоритетности товаров и торговой марки;
- на третьем - создание приверженности потребителей к торговой марке, имеющей максимальный спрос;
- на четвертом - информирование о распродаже по сниженным ценам.

Представленная классификация позволяет успешно разрабатывать комплекс рекламных мероприятий на базе научно обоснованной методологии [6, с.16].

Однако на практике (особенно в искаженных условиях российского рынка) возможны значительные отклонения от теоретических моделей.

Стратегии маркетинга на стадии внедрения нового товара. Стратегия интенсивного маркетинга при выходе на рынок нового товара предполагает установление высокой цены при одновременно высоком уровне затрат на продвижение товара.

Такая стратегия оправдывает себя при следующих условиях:

- значительная часть потенциальных покупателей ничего не знают о товаре;
- покупатели, осведомленные о товаре, готовы приобрести его за высокую цену;
- компания учитывает возможность конкуренции и стремится произвести у покупателей хорошее впечатление о своем товаре.

Стратегия выборочного проникновения при выходе на рынок нового товара предполагает высокую цену при низком уровне затрат на продвижение товаров. Высокую цену устанавливают для получения максимально возможной прибыли на единицу товара. Низкий уровень затрат на продвижение товаров имеет целью уменьшить маркетинговые расходы.

Применение этой стратегии целесообразно в следующих условиях:

- емкость рынка ограничена;
- значительная часть покупателей знает о товаре;
- покупатели, которые хотят приобрести товар и готовы платить за него высокую цену;
- конкуренции почти нет.

Стратегия широкого проникновения на рынок характерна установлением на новый товар низкой цены при высоком уровне затрат на стимулирование сбыта. Стратегия пассивного маркетинга предполагает установление низкой цены при незначительных затратах на стимулирование сбыта. Эта стратегия основана на предположении, что спрос зависит от эластичности цен в большей степени, чем от маркетинговых мероприятий.

Наибольшего эффекта от продвижения продукции можно достичь, по мнению автора, используя т. н. интегрированные маркетинговые коммуникации – ИМС (Integrated Marketing Communications) [1, с.82]. Эта концепция охватывает проработку детального плана, в котором оценивают стратегические роли всех подходов – рекламы на широкую публику, прямого предложения, стимулирования продаж, связи с общественностью. Главная задача ИМС – обеспечить ясность, последовательность и максимальное воздействие на потребителя.

На стадии зрелости ЖЦТ может быть применена одна из трех стратегий: модификация рынка, модификация товара, модификация маркетинговых средств. На этом этапе производитель сполна использует методы ценовой конкуренции, усиливает рекламную деятельность, акцентируя внимание на массовом покупке-консерваторе. Необходим поиск дополнительных рынков для нового товара и новых покупателей.

Для того, чтобы максимально «растянуть» период быстрого роста рынка, предприятие может использовать несколько стратегических подходов:

- повысить качество нового товара, придать ему дополнительные свойства, выпустить его новые модели;
- проникнуть в сегменты рынка;
- использовать новые каналы распределения;

- переориентировать часть рекламы с распределения осознанности о товаре на стимулирование его приобретения;

- своевременно снизить цены с целью привлечения дополнительного числа покупателей.

Модификация рынка заключается в поиске новых сегментов рынка и новых пользователей с целью увеличения объема продаж существующего товара.

Суть модификации товара в том, что товаропроизводитель может модифицировать характеристики своего изделия, такие, как уровень качества, свойства или внешнее оформление), чтобы привлечь новых покупателей и интенсифицировать потребление.

Цель стратегии улучшения качества товара – усовершенствовать такие функциональные характеристика товара, как долговечность, надежность, скорость, вкус.

Этот подход эффективен в следующих случаях: цель стратегии улучшения свойств товара - придать ему новые качества, которые сделают его более универсальным, безопасным и удобным [2, с.89].

Цель стратегии улучшения внешнего оформления товара – повысить привлекательность товара [4, с.77].

Модификация комплекса маркетинга заключается в том, чтобы предприятие, помимо прочего, пыталось стимулировать сбыт с помощью одного или нескольких элементов комплекса маркетинга.

Для привлечения новых покупателей и переманивания клиентуры конкурентов можно снизить цену, попробовать разработать более действенную рекламу, применить активные приемы стимулирование сбыта (например, заключение льготных сделок с продавцами, выпуск купонов, дающих право на небольшую скидку с цены, распространение сувениров, проведение конкурсов, ярмарок, лотерей).

Сохранение в своей номенклатуре товара, вступившего в стадию спада (старения), может оказаться для предприятия чрезвычайно накладным. Такой товар может отнимать слишком много времени: он часто требует корректировки цены и переоценки товароматериальных запасов. Но самые значительные неприятности могут ожидать производителя в будущем: не будучи своевременно снятыми с производства, «стареющие» товары мешают началу энергичных поисков их замены. Такие товары подрывают рентабельную деятельность сегодня и ослабят позиции производителя в будущем.

Как считают большинство исследователей и автор этой статьи, важнейшая задача маркетолога – сохранить в номенклатуре предприятия тот товар, который вступил в стадию старения, или определить условия его выхода с рынка. Работу на этой фазе следует базировать на широком и глубоком анализе предыдущих фаз ЖЦТ и определении целесообразности продолжать выпуск товара. Это исследование поможет в решении вопроса: «нужно ли начинать разработку нового товара?» Ведь благополучие предприятия надежно обеспечено только тогда, когда жизненные стадии различных товаров, которые оно выпускает, перекрывают друг друга. Это означает, что еще до момента насыщения рынка одним товаром на него должен быть введен уже следующий, новый товар.

Разрыв между стадиями во времени часто ведет к потере предприятием позиций на рынке, снижению его экономических показателей и даже банкротства.

Автор считает, что только в результате внедрения приведенных маркетинговых стратегий на соответствующих фазах развития товара можно достичь желаемых, то есть наивысших результатов в бизнесе.

Любая компания, рассчитывая на успех в рыночной среде, должна иметь надежную маркетинговую стратегию и гибкую тактику действий. Рано или поздно под влиянием значительного количества факторов актуальные концепции становятся устаревшими.

Особенность прогрессивной маркетинговой технологии в том, что она призвана охватывать специфические подходы к деятельности фирмы, направленные в конечном итоге на повышение рентабельности бизнеса. Основной задачей маркетинговой стратегии является разработка планов и программ выхода с товаром -новинкой на рынок и органическое введение новинки в ассортимент продукции компании [1, с.91].

Конечно, любую стратегию необходимо корректировать в зависимости от влияния условий внешней среды и типа рыночной модели, для которой разработаны эти меры, поскольку упомянутые факторы иногда оказывают решающее влияние на конечный результат и нередко приводят к негативным последствиям.

Выводы. В заключение можно отметить, что маркетинговая стратегия является важнейшим инструментом для успешного развития организации на современном конкурентном рынке. Она представляет собой комплексный и системный подход к решению задач и достижению целей, а также позволяет эффективно управлять ресурсами и повышать конкурентоспособность компании. Наконец, стоит подчеркнуть, что маркетинговая стратегия является инвестицией в будущее организации. Правильно разработанная и успешно реализованная стратегия способна не только обеспечить стабильный рост и развитие компании, но и повысить ее имидж, привлечь новых клиентов и укрепить лояльность существующих. В итоге, маркетинговая стратегия играет определяющую роль в достижении успеха организации и помогает ей выделиться среди конкурентов на динамичном рынке.

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HISTORICAL SCIENCES

THE ROLE OF H. ALIYEV IN THE FORMATION OF THE AZERBAIJANI STATE

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РОЛЬ Г. АЛИЕВА В СТАНОВЛЕНИИ АЗЕРБАЙДЖАНСКОГО ГОСУДАРСТВА

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Abstract
Thanks to the relentless and laborious work of H.Aliyev as the First secretary of the Central Committee of the Communist Party of Azerbaijan and the President of the Republic of Azerbaijan, as well as his organizational skills and principles the foundation of the country's progressive development was laid providing its leading positions in the Caucasus region today.

Аннотация
Благодаря неустанной кропотливой деятельности Г.Алиева на посту Первого секретаря ЦК КП Азербайджана и Президента Азербайджанской Республики, его организаторским способностям и принципиальности были заложены основы поступательного развития страны обеспечившей ей сегодня лидирующие позиции в международном масштабе.

Keywords: leader, development, state, activity, society
Ключевые слова: лидер, развитие, государство, деятельность, общество

На протяжении всей своей истории Азербайджан был горд и благодарен историческим личностям, которые появлялись в истории страны именно тогда, когда в них особенно нуждался азербайджанский народ. Жизнь и деятельность любого крупного деятеля - это часть исторической судьбы его народа. Как отмечал великий сын Азербайджанского народа Гейдар Алиев: "… те, кто ушёл в мир иной с верностью народу, нации, возвысив дух национальной независимости народа, являются священными людьми. Их нет среди нас, но их дух в наших сердцах, в сердце всего азербайджанского народа". (7) И сегодня, , отмечая в 2023-м году 100-летие рождения этого выдающегося человека конца советской и начала постсоветской эпохи, мы с гордостью можем сказать, что эти слова высказанные когда - то Г.Алиевым, можно полностью переадресовать ему самому.

Гейдар Алиев был именно тем лидером, с именем которого связано как экономическое, так и культурное возрождение Азербайджанской Республики. В 70-е годы благодаря мудрой, дальновидной политике Г.Алиева в должности Первого секретаря, направленной на национальное возрождение, развитие экономики и социальной сферы, значительно возрос материальный, духовный и кадровый потенциал республики. Следует сказать, что Азербайджан был единственной республикой, у которой удельный вес вклада в бюджет Союза значительно превышал получаемую им из бюджета долю. В эти годы Г.Алиев придавал особое значение сохранению и развитию национальных и духовных ценностей. Следует отметить, что благодаря принципиальной позиции Г.Алиева в Конституцию 1978г. Азербайджанской ССР было включено положение (ст.73), закрепляющее государственный статус азербайджанского языка. Аналогичное положение отсутствовало в конституциях 12 из 15 союзных республик. Благодаря своим незаурядным способностям, удивительной работоспособности, большим организаторским способностям Г.Алиев вошёл в состав высшего руководства супердержавы. В 1982г. Г.Алиев был избран членом Политбюро ЦК КПСС, а затем был назначен и первым заместителем Председателя Совета Министров СССР. И здесь, в Москве, Г.Алиев не забывает об Азербайджане и делает все от него зависящее для развития и процветания родного края. Однако в силу известных внутренних и внешних факторов начался про-

цесс развала Союза ССР. В этот период к руководству Союзом пришёл М.С.Горбачев. Принципиальность и профессионализм Г.Алиева раздражали Горбачева и «по состоянию здоровья» Г.Алиев был снят с занимаемых должностей и отправлен на пенсию.

В Азербайджане в это время тоже сложилась очень тяжёлая обстановка. Армянское население Нагорного Карабаха, заручившись поддержкой Горбачева потребовало выхода области из состава Азербайджанской ССР и присоединения к Армении. В ответ на это в республике началось мощное движение протеста против армянских сепаратистов, которое затем переросло в борьбу азербайджанского народа за национальную независимость, за свободу и территориальную целостность Родины. В этих условиях народ стал объединяться вокруг Народного Фронта. Советское руководство, стремясь воспрепятствовать развалу СССР и преподать урок другим республикам, в ночь на 20 января 1990 г. ввело войска в Баку. Начался расстрел города. В Баку были убиты 131 человек, 744 было ранено, 400 арестовано. Узнав о январской трагедии, Г.Алиев, несмотря на опалу властей, на следующий день направился в Постоянное представительство Азербайджана в Москве и дал соболезнование своему народу. В присутствии зарубежных корреспондентов он смело осудил руководство СССР и Азербайджанской ССР за кровавую акцию против мирного населения и потребовал наказания виновных. После январских событий Г.Алиев решает вернуться на Родину, чтобы быть в эти трагические дни со своим народом. Но Горбачевское руководство СССР настоятельно рекомендует ему не ехать. Г.Алиев всё-таки возвращается в Баку, но преследуемый правящей верхушкой республики улетает в Нахичевань.

Нахичеванская АССР, которую возглавил Г.Алиев, становится оплотом тех, кто хотел перемен и реформ, но не хотел кровавых потрясений. Именно с этого периода начинается процесс возрождения азербайджанской государственности Г.Алиевым. Так, под председательством Г.Алиева Сессия Верховного Совета НАР, состоявшаяся 17 ноября 1990 г., приняла ряд исторических решений:

1) изменила название НА ССР, удалив из неё слова «советская социалистическая»;

2) переименовала Верховный Совет в «Верховный Меджлис»;

3) приняла в качестве государственного флага трехцветный флаг АДР 1918 г.

Вслед за автономией подобные же решения под нажимом народного фронта приняла и республиканская сессия Верховного Совета. 18 октября 1991 года она утвердила «Конституционный акт о государственной независимости» и тем самым была восстановлена государственная независимость Азербайджана. Обретение независимости для нашего народа, безусловно, было историческим событием. Но, к сожалению, последующие руководство республики не смогло вывести страну из тяжёлой кризисной ситуации, которая обострялась ещё и конфликтом между Азербайджаном и Арменией, переросшим к кровавую войну из-за территориальных притязаний последней. Истекающий кровью Азербайджан, наводнённый беженцами и уголовными элементами, с разрушенной экономикой и политической нестабильностью, с оккупированной территорией Нагорного Карабаха и прилегающих к нему районов находился у края бездны.

По настоятельному требованию азербайджанского народа Г.Алиев возвращается в Баку и 15 июня 1993 г. избирается Председателем Милли Меджлиса. Этот день вошёл в историю страны как «День Национального Спасения». А спустя четыре месяца 3 октября 1993 г. он избирается Президентом страны. Гейдар Алиев в народном сознании был живым воплощением надежды. Это была вера в обновленный, созидающий, счастливый Азербайджан. И великий сын азербайджанского народа не обманул его надежд. Возвращение Г.Алиева спасло Азербайджан от политического расчленения, от уже начавшейся гражданской войны, от потери независимости. Обрисовывая задачи и перспективы дальнейшего развития, Г.Алиев особо подчёркивал, что одна из основных задач, стоящих перед независимой Азербайджанской Республикой, является организация государственного строительства, а для этого, в первую очередь, необходимо было стабилизировать политическую ситуацию в стране. Человечность и гуманизм политики Президента способствовали достижению в очень короткий срок национального согласия, снятию глубокой напряжённости во всех социальных слоях общества. 12 мая 1994 г. благодаря активным действиям Г.Алиева было надписано соглашении о перемирии на фронте и в стране началось строительства правового демократического государства. Он был уверен в том : "что ни угрозы врага, ни предательские деяния неблагодарных сынов не в состоянии сломить нерушимую волю нашего народа, стойко переносящего, выпавшие на его долю муки и страдания, смело преодолевающего все встречающиеся трудности. Несокрушимой воле людей, движимых стремлением созидать, полных решимости победить, не в состоянии противостоять ни одна сила. Это должны знать все." (4.)

В мае 1995 г. была создана комиссия под председательством Президента для подготовки проекта новой Конституции. Этот проект был составлен с учётом национальных традиций и обычаев азербайджанского народа, а также общечеловеческих ценностей и мирового опыта составления основных законов страны.

12 ноября 1995 г. путём всенародного обсуждения и голосования был одобрен и принят проект новой Конституции независимого Азербайджана. Таким образом, Азербайджан сделал выбор модели своего исторического развития – строительство светского государства, основанного на принципах демократии, равенства всех граждан, политического плюрализма, либеральный экономики, государства, ведущего миролюбивую политику. Приня-

тие Конституции создало мощную законодательную базу для осуществления полномасштабных реформ.

Следующим шагом в становлении национальной государственности стало проведение 12 ноября 1995 г. демократических парламентских выборов. В результате этих выборов был создан парламент республики – Милли Меджлис.

На основе принятых законов в Азербайджане были проведены политические, экономические, правовые демократические реформы. В феврале 1996 г. при Президенте была создана особая комиссия по правовым реформам. В феврале 1998 г. Президент подписал указ «Об обеспечении прав и свобод человека и гражданина». Указом президента от августа 1998 г. была отменена цензура. Были приняты также законы «О средствах массовой информации», «О свободе вероисповедания» и др. В феврале 1998 г. по инициативе Президента впервые в истории мусульманских стран была отменена смертная казнь в республике. В том же году был создан Конституционный суд. Все эти реформы имели большое значение в области защиты и обеспечения прав и свобод граждан азербайджанского государства.

Для упрочения национальной государственности предстояло многое сделать и в социально-экономической сфере. Кризис, в котором находилась страна, оказал отрицательное влияние на все отрасли экономики. В этих невероятно трудных условиях Г.Алиев провозгласил новую нефтяную стратегию, которая заключалась в активной интеграции Азербайджана в мировую экономику и привлечении зарубежных инвестиций вкупе с самыми современными технологиями. 20 сентября 1994 г. в Баку был подписан нефтяной контракт, вошедший в историю как «Контракт века». Этот контракт имел для Азербайджана большое политическое значение и далеко идущие экономические последствия. Это событие, круто изменило политическую ситуацию во всем прикаспийском регионе, способствовало утверждению Азербайджана на международной арене как действительно независимого государства, способного распоряжаться своими природными ресурсами. Подписав «Контракт века», 7 крупнейших развитых стран мира в лице 11-ти нефтяных компаний заявили о своём интересе к Азербайджану. Это стало мощным импульсом и для других стран, которые последовали их примеру. Благодаря «Контракту века», как отметил Президент Ильхам Алиев, сегодня : "Создание нефте - и газопроводов Баку-Тбилиси-Джейхан, Баку-Тбилиси-Эрзурум, TANAP, Южного газового коридора, железной дороги Баку-Тбилиси-Карс - каждый из них – это гигантский проект, имеющий огромное значение … для региона, мира, Евразии." (5)

Работа по возрождению национальной экономики велась во всех направлениях. Были заключены договоры с Международным Валютным фондом и Всемирным Банком. Азербайджан присоединился к Европейскому Банку реконструкции и развития. Усилился контроль над бюджетным дефицитом, были приняты меры для предотвращения его роста. В результате, в 1995 г. уровень инфляции стал стремительно падать, а в 1998 г. инфляция была полностью преодолена. В апреле 1994 г. был издан указ о свободе внешней торговли. Интенсивно стала развиваться химическая промышленность.

Одним из важных направлений структурных изменений в экономике были реформы, проводимые в аграрном секторе. Были приняты законы «О государственных землях», «О земельном налоге» и другие. Все указы, все реформы президента в конечном итоге преследовали одну цель – повышение благосостояния и жизненного уровня азербайджанского народа. А потому, несмотря на материальные трудности, переживаемые страной, проблемы социальной защиты людей всегда были в центре его внимания. По инициативе Президента в стране была подготовлена «Государственная программа по уменьшению бедности и экономическому развитию» на 2002-2005гг.

Г.Алиев никогда не оставлял без непосредственного участия и внимания проблемы духовного развития своего народа. В декабре 1991 года было принято решение о восстановлении Азербайджанского алфавита, основанного на латинской графике. Указом Президента о совершенствовании системы образования в Азербайджанской Республике от 13 июня 2000 года было положено начало новому этапу в организации и развитии высшего образования в стране. В принятом в ноябре 1997 года «Законе о культуре» были определены основные направления деятельности в этой области.

В эти годы оживилась и спортивная жизнь в республике. Был утверждён Национальный Олимпийский Комитет. После избрания Ильхама Алиева председателем этого комитета в 1997 году, его деятельность заметно активизировалась. Спортсмены независимой Азербайджанской Республики успешно выступили на XXVI (1996) и XXVII (2000) летних Олимпийских играх.

Возвращение Г.Алиева к власти в Азербайджане остановило грозные процессы разрушения до основания всего здания государственности, в том числе и внешней политики. Колоссальное значение для утверждения международного престижа нашей республики имело то обстоятельство, что во главе неё стоял авторитетный, опытный государственный деятель и известный политик, чьё имя говорит само за себя, являясь самой надёжной гарантией для зарубежных инвесторов. Крупнейшие лидеры стран Запада и Востока с нескрываемым восхищением говорили о беспрецедентном политическом опыте президента Азербайджана, о масштабах его реформаторской деятельности и непременно подчёркивали, что он безусловно является одним из самых авторитетных лидеров в ряду деятелей международного масштаба.

В 1993 года начинается вхождение Азербайджана в систему новых отношений между государствами. Возрождаются традиционные и создаются новые связи, кропотливо распутываются клубки

противоречий. Главной задачей внешнеполитической деятельности Г.Алиева было привлечение внимания мировой общественности, лидеров государств, руководителей авторитетных организаций к Азербайджану и не только к его проблемам и бедам, связанным, в основном, с армянской агрессией и наличием армии беженцев, но и крупному экономическому, интеллектуальному, политическому потенциалу. Одной из первых среди республик СНГ Азербайджан присоединяется к программе НАТО «Партнёрство во имя мира (май 1994 г.)» и сегодня активно взаимодействует с Североатлантическим альянсом в самых разных областях. Г.Алиев превращает Лиссабонский саммит (1996) ОБСЕ в триумф азербайджанской дипломатии, добившись принятия документа, в котором содержится три принципа урегулирования армяно-азербайджанского конфликта. 53 из 54 стран - членов ОБСЕ, в принятом заявлении о путях разрешения Нагорно-карабахского конфликта поддержали принцип территориальной целостности Азербайджана. На саммите в Касабланке он добивается того, что ОИК признает Армению агрессором.

После подписания «Контракта века» в лексикон политиков и бизнесменов вошло ещё одно выражение - «Шелковый путь». 13 сентября 1998 г. в Баку была проведена Международная конференция, посвящённая восстановлению шелкового пути, открывшего новую страницу в региональном сотрудничестве стран, находящихся на этом пути. Штаб-квартира этой международной организации разместилась в Баку и Азербайджан, таким образом, стал центром этой международной структуры.

25 января 2001 года Азербайджан стал 43 по счёту полноправным членом Совета Европы. Это по истине историческое событие является логическим результатом огромной работы по демократизации всех сфер в жизни нашего обществе по проведению политических и экономических реформ, осуществляемых в нашей республике под руководством президента Г.Алиева. За предельно короткий исторический отрезок времени после обретения государственной независимости Азербайджан стал членом единой, неделимой Европы и на деле доказал мировому сообществу, что процесс интеграции республики в цивилизованную семью европейских народов стало необратимо.

Благодаря ежедневной, кропотливой, продуманной деятельности Г.Алиева по созиданию нашей государственности, Азербайджан сумел доказать свою жизнеспособность, доказать, что состоялся как суверенное государство, вполне способное успешно проводить свою независимую политику. Имя Гейдара Алиева внесено в историю азербайджанского народа его делами, практической деятельностью. Создание стабильной политической обстановки, укрепление государственной дисциплины, последовательное развитие демократии, успешная внешняя политика, прекращение военных действий на фронте, установление отношений равноправного сотрудничества и партнёрства с ведущими государствами мира, смелые и радикальные реформы, способствующие развитию рыночной экономики, создание условий для направления больших иностранных инвестиций в нефтяную промышленность и другие отрасли хозяйства, меры направленные на укрепление духовного единства – вот основные направления этой политической работы. Вступая в должность президента, Г.Алиев давал клятву (10 октября 1993 г.) всему народу Азербайджана: «Клянусь достойно служить Азербайджанской Республике, азербайджанскому народу, стремиться к тому, чтобы наще независимое государство заняло достойное место среди цивилизованных государств мира, в мировом сообществе» (6) и до конца своих дней остался верен данной клятве.

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MEDICAL SCIENCES

HISTOMORPHOLOGICAL EVALUATION OF VENOUS VESSELS IN THE SPINAL GANGLIA. ANIMAL MODEL OF STUDY

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Abstract

We present the morphological (histological and ultrastructural) peculiarities of venous vessels of spinal ganglia, especially the specific properties of extracapsular vessels under light and electron microscopic study. The research performed on male rat's spinal ganglia. The object of research fixated by intravascular perfusion, then embedded in Epon - Araldite blocks according to general methods accepted in microscopy. Also, from spinal ganglia taken after intra aortal administration of ink solution dissolved in 10% gelatin, prepared blocks. Obtained semithin and total cryostat section investigated under microscopes. The current study demonstrates cellular structure of venous vessels walls, source, formation and direction of venous vessels of spinal ganglia.

Keyword: spinal ganglia, postcapillary venule, collecting venule, ultrastructure

Introduction. One of the important conditions for a detailed morphofunctional study of the blood supply of organs and organ systems is to learn the composition and structural characteristics of the vessels involved in the organization of local blood circulation. From this point of view, investigation of the structure of the microcirculatory system vessels of the spinal ganglion, as well as the cellular and non-cellular elements composing their wall is particular important, because of it closely involved in the formation of neuropathies of various origins.

Taking into account that we have already published information about arterial vessels participated in vascularization of spinal ganglia [1, 2], the presented data will be devoted to the histotopography of internal venous vessels, types of formation and structure of their walls. We should first note that although the diameters of the venous vessels within the spinal ganglia are sometimes reaches to the 55 μm, but considering that their walls are composed of only one layer of endothelial cells and incomplete pericyte , they are not veins [3].We will call it venules.

Aim of research were to study the morphological peculiarities (histological and ultrastructural composition) of venous vessels walls, source, formation and direction it within spinal ganglia.

Material and methods. The object of research is spinal ganglia (lumbar and thoracic) taken from 20 white rats, weighing 180-200 gr, bred under special patogen free conditions. Under ketamine/xylazine (100/10mg/kg) anesthesia, the thoracic cavity of rats was opened through parasternal incisions and injected into the ascending aorta through a catheter 2.5% glutaraldehyde solution prepared in 0.1M phosphate buffer (pH=7.4). Epon-Araldite blocks were prepared from the ganglia of 10 white rats after fixation by intravascular perfusion during 20-25 minutes. Obtained the semithin sections (1-2 μm) from the blocks on LKB-III ultratome were stained with methylene blue, azure II and basic fuchsin, respectively [4, 5].

The ink solution dissolved in 10% gelatin was injected into the ascending aorta of another 10 white rats with the same catheter (used for intravascular perfusion) until it outflow from the vena cava inferior, then the spinal ganglia was taken together with the spinal roots and nerves, fixed in 10% formalin solution, and frozen in a cryostat. Obtained the total sections with thickness of 100-150 μm were analyzed under light microscope. Both semithin and total sections were viewed under a Latimet (Leitz) microscope and pictures of the necessary parts were taken with a Pixera digital camera system.

Results. The semithin section of the spinal ganglion shown in Figure 1A. The center of slide occupied by the spinal ganglia itself, the posterior root entering the ganglion shown on the lower right, the anterior root resting on the top of ganglion, and the forming spinal nerve seen clearly on the left, as well as the branches (ventral and dorsal) that depart from the latter and surrounding them the connective tissue sheaths with neurovascular elements.

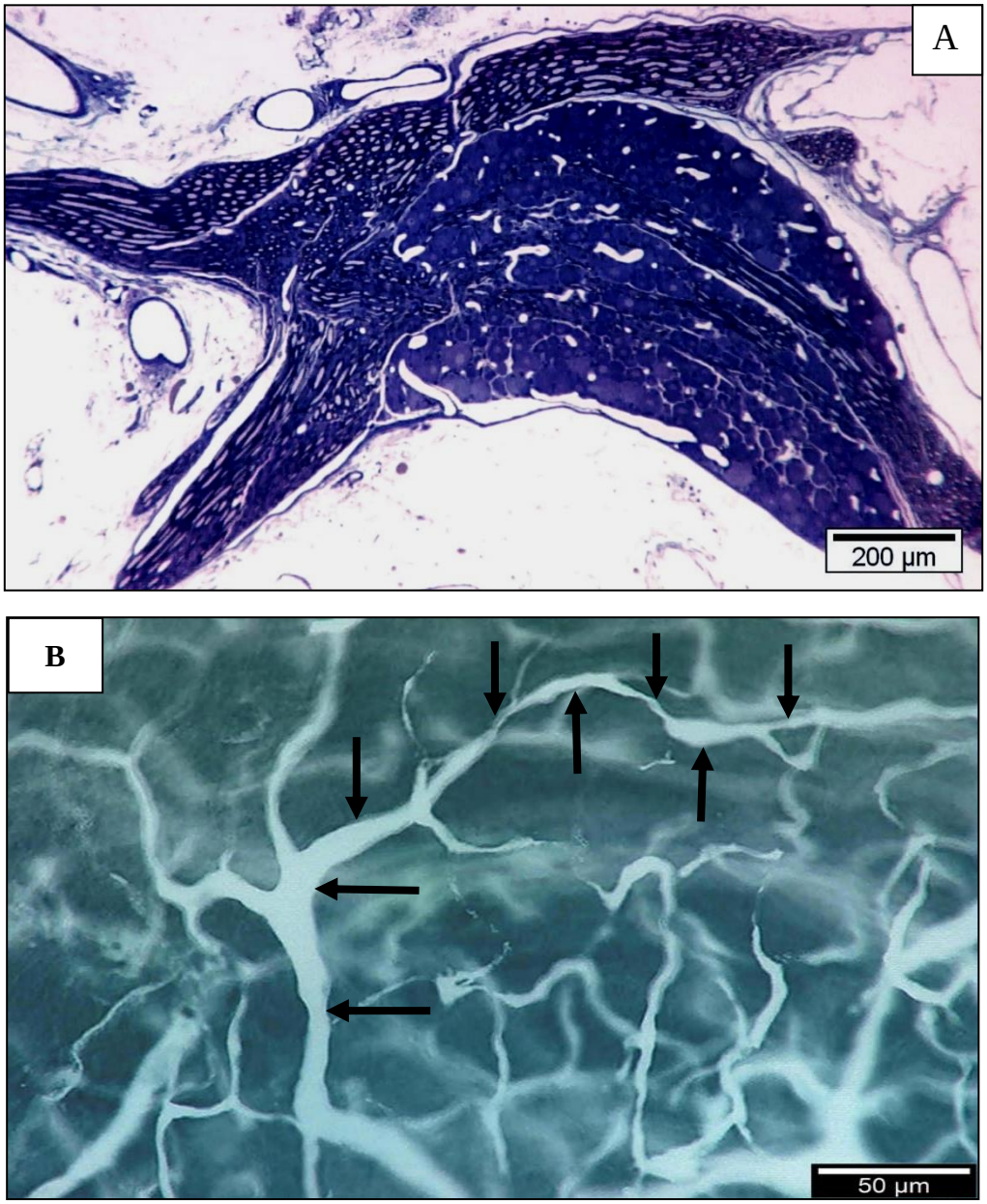

Figure 1. Histotopography of spinal ganglion's vessels surrounding organ and intraorganic location (A), microscopic images of branching and formation of intraorganic vessels (B). The explanation is given in the text. Stain: methylene blue (A), cryostat sections of intravenously injected preparations that viewed by inversion methods on photoshop program (B). Scale bars: A 200µm, B 50µm.

The obtained materials show that while around the spinal ganglia within surrounding connective tissue elements located the arterial and venous vessels of different diameters (Fig. 1A), only arterioles, precapillary arterioles, capillaries, postcapillary and collecting venules, which are components of the microcirculatory system, are found inside the ganglion. In particular, it should be noted that along with main arteries and veins, lymphatic vessels included in microcirculatory system are not detected within spinal ganglia.

In the demonstrated histological slide attract attention the following facts:

- Clearly seen the histotopographical conditions of the vessels placed inside and around the spinal ganglia in semithin sections revealed after fixation by the intravascular perfusion method (Fig. 1A), as well as the cellular elements composing their walls (unstained areas against the background of darkly colored peripheral field) at higher magnifications of the light microscope (Fig. 1B)

- the density of the vessels located in the spinal ganglia, that is, the degree of blood supply, a noticeable increased in comparison with the ventral and dorsal roots, the spinal nerve and its branches, and the connective tissue elements located around the ganglion;
- none of the sheaths that directly covered all the named structures (connective tissue elements of spinal ganglia, ventral and dorsal roots, spinal nerve) have a special vascular network;
- the presence of arterioles and venous vessels with diameters above 100μm, only in the connective tissue elements around the ganglion.

Based on the actual data presented, it can be said with complete certainty that the vessels involved in the vascularization of spinal ganglia should be divided into only two groups - extraorganic and intraorganic [1, 2].

Comparison of obtained reports with literature data shows that [6] the density of spinal ganglia vessels in dogs is less than peripheral nerves. However, contrary to this, the data obtained in the present study and researches conducted in different species of animals, with the help of different methods [3, 7, 8] shown that, among the structures included to the peripheral nervous system, the density of vascular elements in the spinal ganglia is comparable to that of the cerebral cortex.

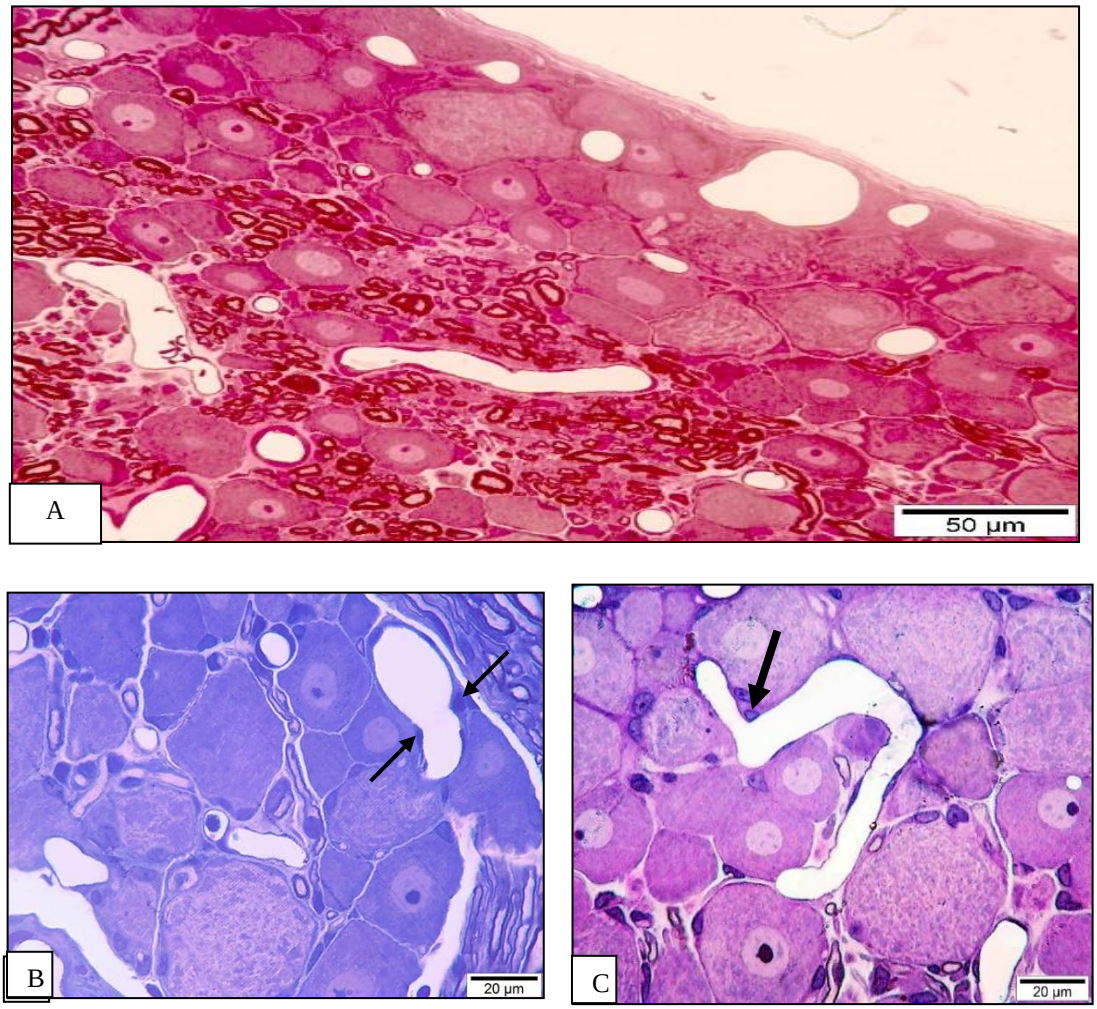

Figure 2. Microscopic images of vessels situated within spinal ganglia. Semithin section. Stain: A methylene blue and basic fuchsin, B and C methylene blue. The explanation is given in the text. Scale bars: A 50μm, B and C 20μm.

Most of the vessels starting from the precapillary arterioles, whose diameter varies between 4-10μm, can be attributed to capillaries. However, the lumen of both the capillaries and the postcapillary venules (formed as a result of fusion capillaries) along its course alternated between the expanded and narrowed parts.

For example, the diameter of the capillary (indicated by the arrow in Fig. 1B) starting from the upper right side and to left, is 4μm, 12μm, 4μm, 6μm, 5μm, 12μm, and the diameter of the initial part of the postcapillary venule formed by the combination of the capillaries located around it is 13μm, while its diameter is only 6.5μm in the last part marked by the arrow. Postcapillary venules starting from the capillary network by different ways (Fig. 1B lower part), with diameters ranging from 11μm to 15μm, by joining with each other in the subcapsular area of spinal ganglia and formed collecting venules with diameters equal to 30-55μm. The latter flow to the extraorganic venous vessels by piercing the capsule of the spinal ganglia

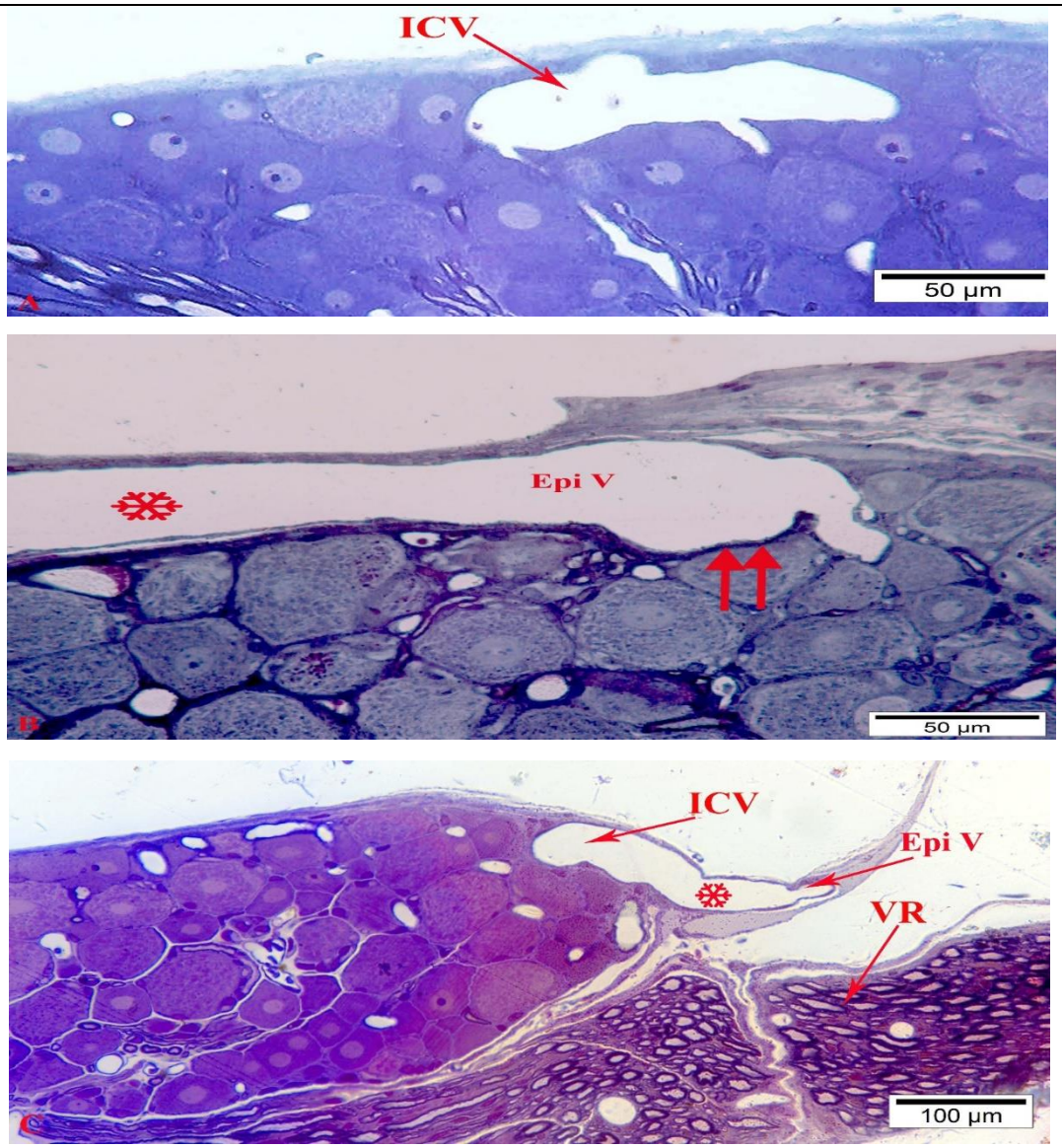

Figure 3. Microscopic picture of intracapsular collecting venules in the subcapsular area (A), in the regions where penetrate the capsule (B, C) . Semithin section. The explanation is given in the text. Abbrevation: ICV- intracapsular venule, EpiV – epineurial venule, VR – ventral root. Stain: A, B methylene blue, C methylene blue / azure II + basic fuchsin. Scale bar: A, B 50 µm, C 100 µm.

The morphometric measurements performed on semithin sections of ganglions vessels fixed by the perfusion method and the composition of cells in the walls of the vessels show that the vast majority of vessels located inside the spinal ganglia belong to venular vessels. For example, in the semithin section on Figure 2A demonstrated 12 of the 18 microvessels; in Figure 2B 4 of 7 vessels; In Figure 2C 4 out of 5 vessels are postcapillary and collecting venules revealed according to the diameter of their lumen.

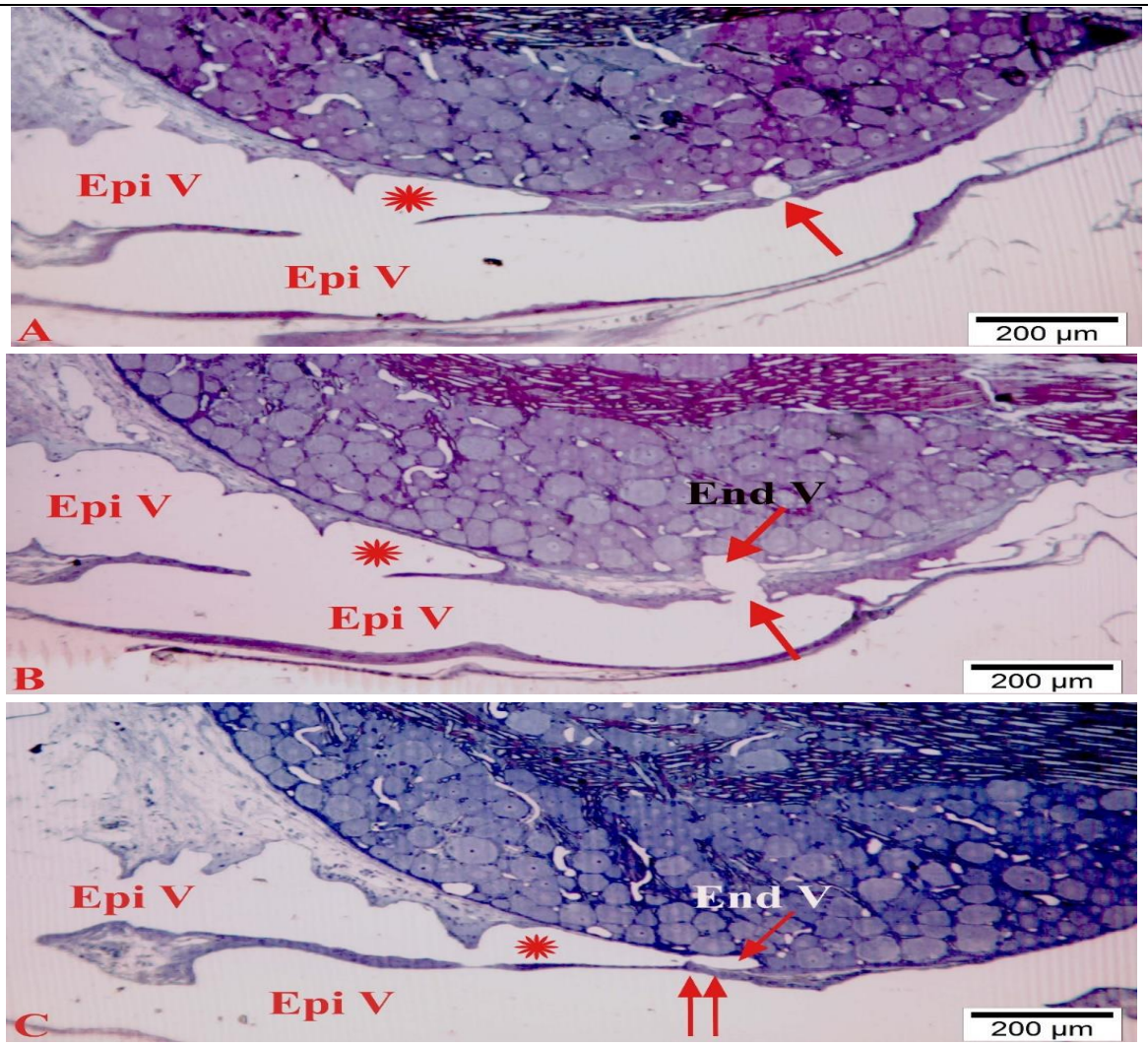

Figure 4. Microscopic images of serial semithin sections of intracapsular collecting venules where they open into extracapsular venous sinuses. The explanation is given in the text. Abbrevation: EpiV – epineurial venule, EndV – endoneurial venule. Stain: methylene blue. Scale bar 200µm in all three slide.

A cross-sections of pericytes and sometimes primitive muscle cells can be found in the area of contractions along the course of venules (Fig. 2B is indicated by an arrow). It should be noted that sometimes the described contractions are also revealed in the areas where the capillaries pass into the postcapillary venule.

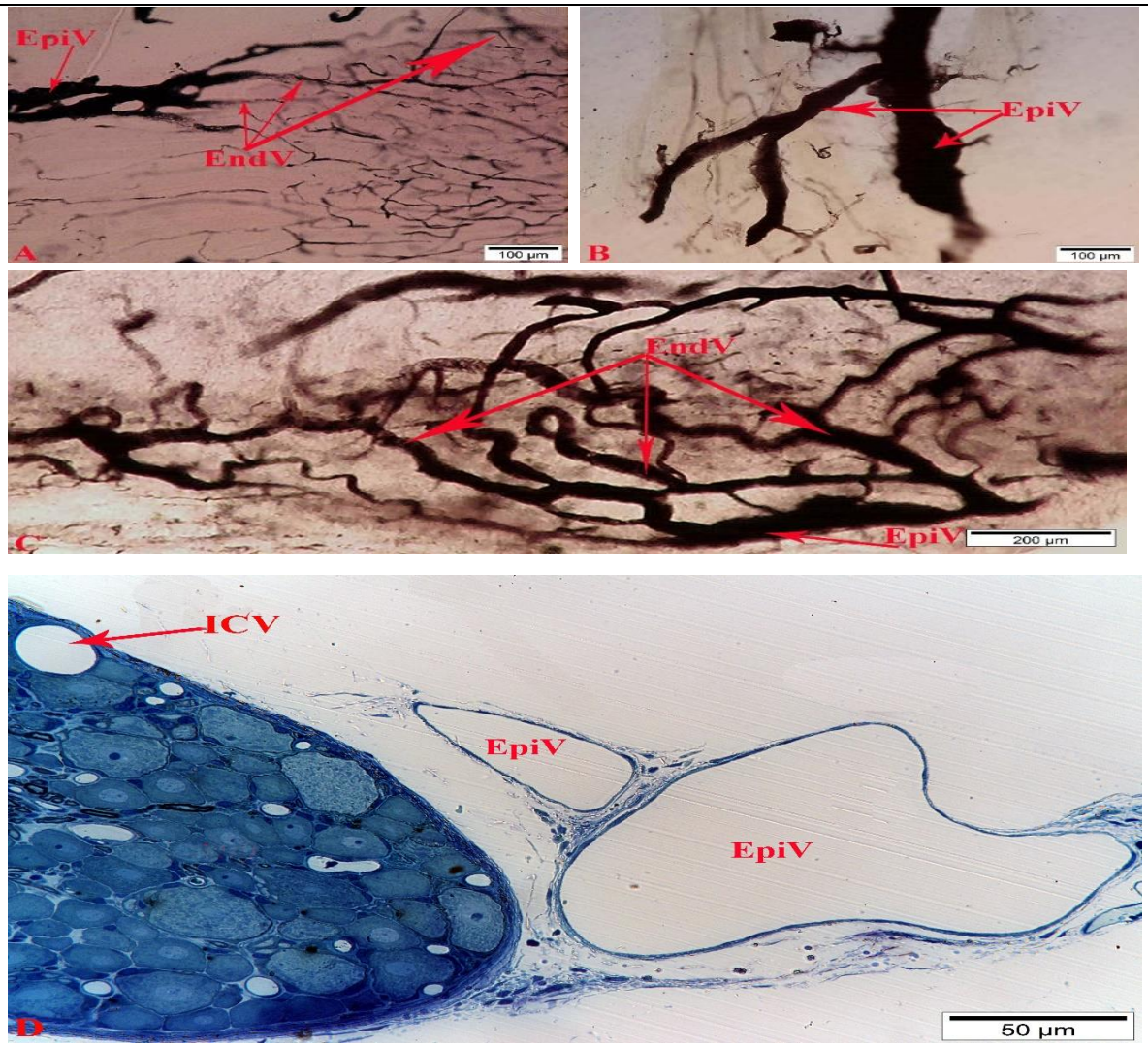

Figure 5. Microscopic images of mutual relation of intracapsular and extracapsular venous vessels of the spinal ganglion. A, B, C the cryostat sections revealed after intravascular perfusion-fixed and administred into the ascending aorta ink solution (dissolved in 10% gelatin). Microscopic image of a perfusion-fixed semi-thin section. The explanation is given in the text. Abbrevation: ICV -intracapsular venule, EpiV – epineurial venule, EndV – endoneurial venule. Stain: methylene blue. Scale bars: A, B 100µm, C 200µm, C 50µm.

In the semithin section shown in Figure 2C is clearly visible at the junction of capillary with diameter 9µm into the postcapillary venule in 14µm diameter the cross-section of a pericyte (indicated by an arrow). While the enlarged parts of capillaries and venules serve to increase the exchange surface areas of microvessels, the location of cells with the ability constrictions around the narrow regions suggests that they participate in the regulation of intraganglionic blood flow.

The study of the used methods and sections (total, histological, semi- and ultrathin) clearly shows that most of the venous vessels included in the external vascular network of spinal ganglia take their origin from the intracapsular vascular network.

More clearly, the venous vessels formed as a result of the connections of the postcapillary venules in the endoneurial area of the spinal ganglia (Fig. 3, 4, 5) pierce the ganglion capsule and enter the external vascular network of the capsule.

On Figure 3A shown the collecting venule with a diameter of 23µm surrounded by a single layer of endothelial cell placed in subcapsular area, which appears to be formed by the fusion of thin postcapillary venules and directed towards the capsule of spinal ganglia.

In Figure 3B, it is clearly seen that a venous vessel with a diameter of 58µm pierces the perineural cell layer of the capsule of spinal ganglia and entersbetween the bundles of collagen fibers of the epineural layer.

In Figure 3C, a collecting venule with a diameter of 41 µm in the endoneurial area can be seen completely piercing the capsular elements and enter the extracapsular area.

Among the connections between the intracapsular and extracapsular vascular networks with the presence of venous vessels, attract the interest on serial semithin sections is shown in Figure 4. In Figure 4A, in the epineural layer of the capsule of spinal ganglia visible lumen with diameter of 84,93µm in the initial part of the photomicrograph (from left to right), and it continues as 99,84µm; 155,8µm; 178,72µm; 200,26µm; 287,64µm; 308,66µm; 333,71µm; 367,14µm, and at the end (in the lower left pole of the

image) observed a venous sinus with diameter of 404,51μm, similar to the sinuses of the dura of the brain.

The similarity with the venous sinuses is that despite their wide diameter, around the endothelial cells in their walls are located only bundles of collagen fibers belonging to the epineural layer. In Figure 4A from the above described venous sinus separated the venous vessel (shown by an arrow) in diameter 55μm that lined by own endothelial cells and leaving the endoneurial area. In Figure 4B is observed the depicted endoneural venule opened into the sinus (indicated by the arrow).

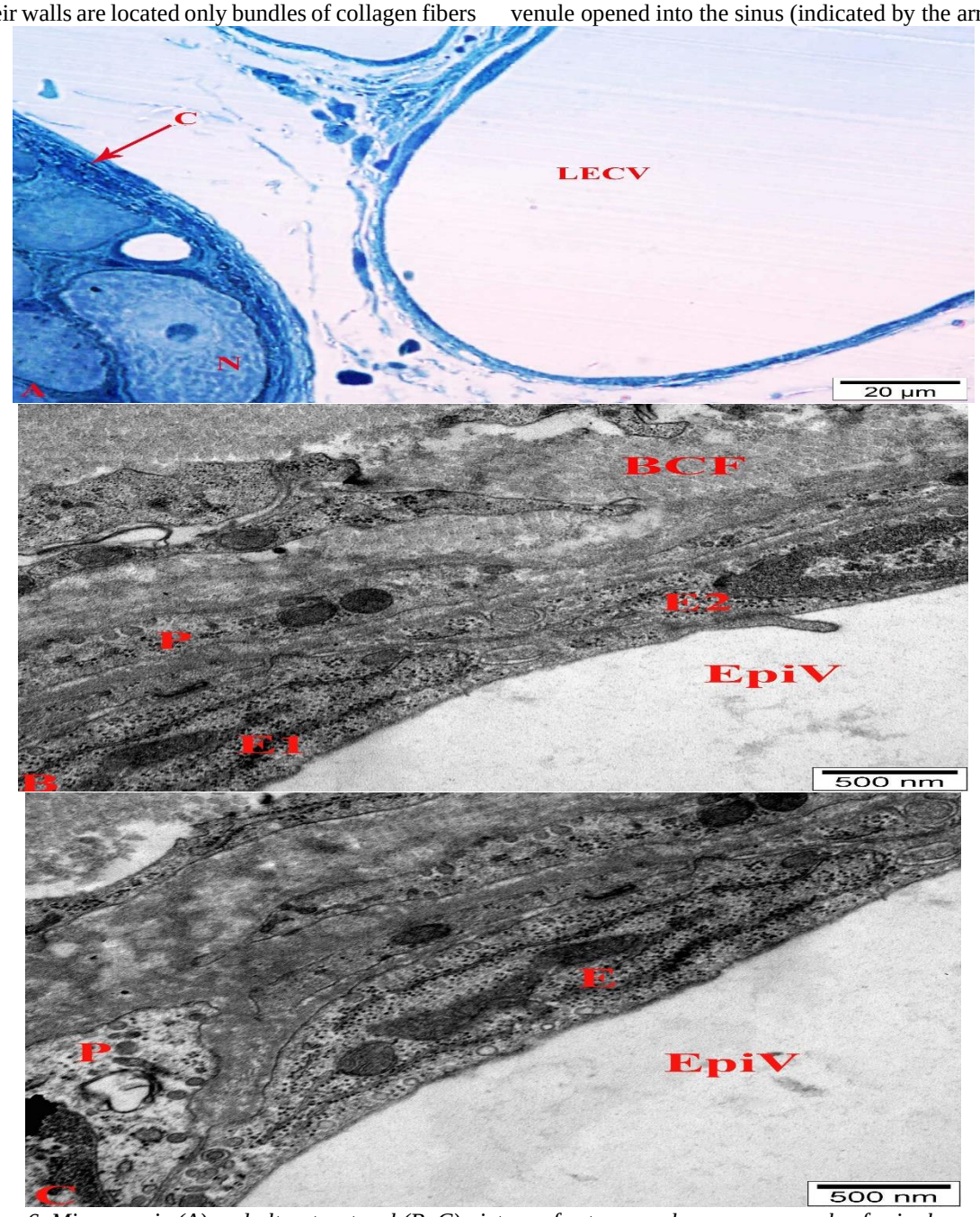

Figure 6. Microscopic (A) and ultrastructural (B, C) picture of extracapsular venous vessels of spinal ganglion. A semithin section, B, C electrograms. The explanation is given in the text. Abbrevation: LECV – lumen of extracapsular vein, C-capsule of spinal ganglia, EpiV – epineurial venule, E1 and E2 – endothelial cells, P-pericyte, BCF -bundle of collagen fibers. Stain: A methylene blue, B uranyl acetate and pure lead citrate. Scale bars: A 20μm, B, C 500 nm.

It should be noted that in Figure 4A and 4B to the left of the venule indicated by arrow is the leg-like extension of the venous sinus (indicated by asterisks). In demonstrated the serial semithin section on Figure 4C, there is no doubt that the venule leaving the endoneurial area opens into the wide leg-like region of the venous sinus. Thus, the venous vessels leaving the endoneural area of the spinal ganglia either do so alone (Fig. 3), or alternately join the venous sinuses located within the capsule of the organ (Fig. 4).

On Figure 5A, 5B, 5C are shown the venous vessels originating from the intracapsular vascular network by different ways and their participation in the formation of the extracapsular vascular network. However, in Figure 5D are shown the sections of venous vessels that have completely left the capsule of

spinal ganglia and separated from it by loose connective tissue elements.

What is interesting is that while in the wall of the venous vessel with an average diameter of 45μm (on the left) participated only endothelial cells and located around them the collagen fibers, the thickening due to the placement of other cells in the wall of the venous vessel with an average diameter of 180μm (on the right) attracts attention (see below).

In Figure 6 demonstrated the electron microscopic images of a part of the extracapsular perisitic venule with an average diameter of 115μm and cellular, fibrillar structures involved in the organization of its wall. This vessels separated from the capsule of spinal ganglia by loose connective tissue elements.

Belonging to pericytic venules of the discussed type of vessel is determined by the following signs:

- whether at the light (Fig. 6A) or electron microscopic levels (Fig. 6B), the central parts of the endothelial cells, where the nucleus is located, are not bulging towards the vascular lumen compared to the arteries;
- non-detection of structures belonging to the internal elastic membrane or its fragments in the subendothelial area;
- placement of bundles of collagen fibers between the inner endothelial layer and the middle pericytic layer (indicated by a star in Fig. 7A);
- detection of vacuolo-vesicular clusters, which play a key role in the formation of transendothelial channels in the peripheral parts of endothelial cells (indicated by arrows in Fig. 7 A, B and C);

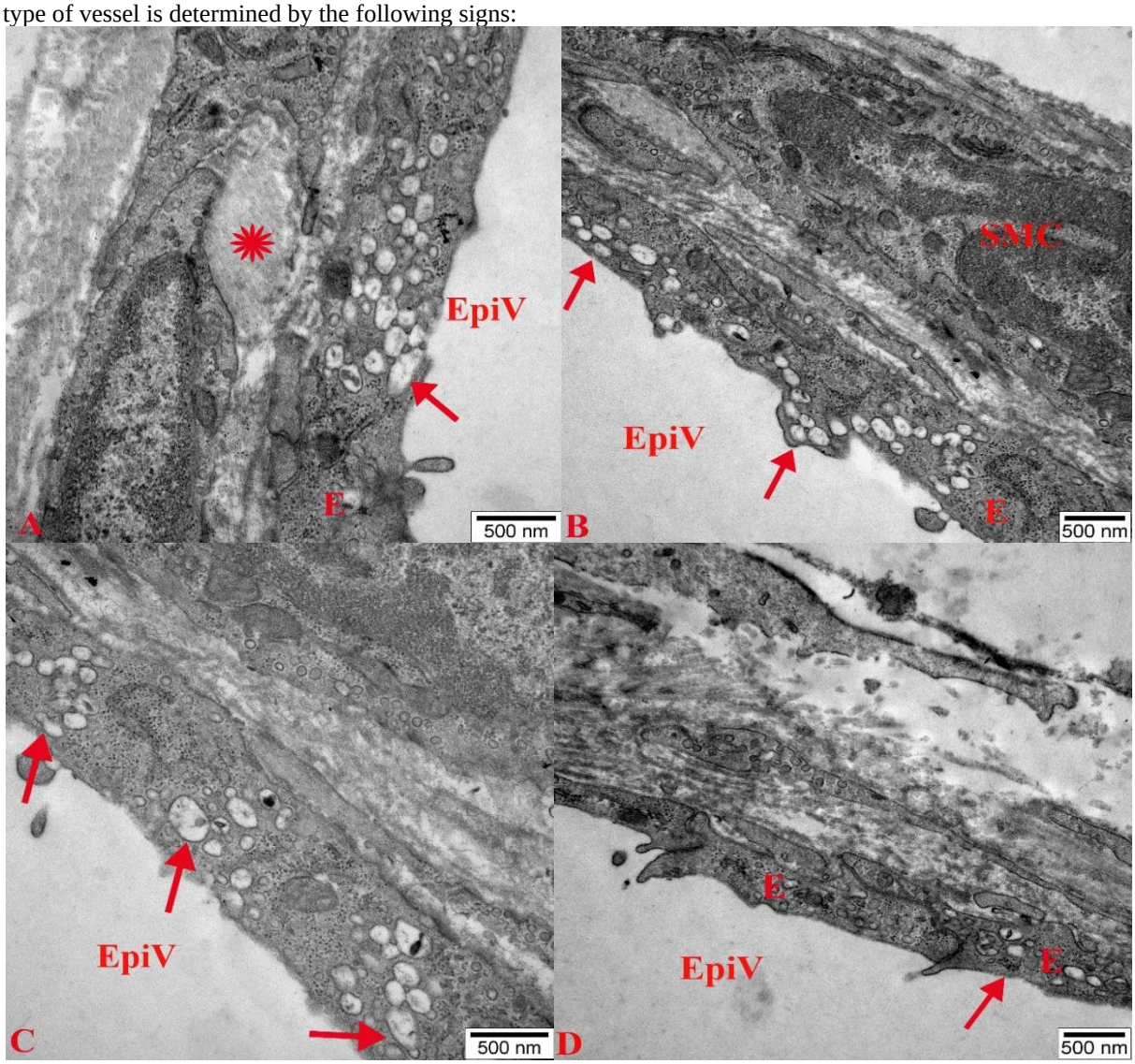

Figure 7. Electron microscopic images of the structures involved in the organization of the walls of extracapsular pericytic (A, B, C) and muscular (D) venules of spinal ganglion. The explanation is given in the text. Abbrevation: EpiV – epineurial venule, SMC-smooth muscle cells. Stain: uranyl acetate and pure lead citrate. Scale bars in all slides 500 nm

- in the periendothelial layer, located pericytes that the nucleus-cytoplasm ratio is low, the cytoplasm is ligth compared to muscle cells (Fig. 6C, Fig. 7A), and also in the perinuclear areas are rarely found mainly mitochondria, granular endoplasmic reticulum, ribosomes, Golgi complexes (Fig. 7B), dense bodies associated with their plasmolemma;

- In the electrograms shown in Figure 7C, 7D, the presence of caveolae (indicated by arrows in both pictures) associated with the plasmalemmas on the peripheral parts of the cells located in the periendothelial area, the dark cytoplasm due to the structures included in the actin-myosin complex can give the impression that they belong to muscle fibers.

However, the dense bodies associated with their plasmolemma are difficult to detect, their peripheral parts are thin, etc. indicates that the depicted cells belong to primitive muscle cells, which are considered to be a transitional form between pericytes and smooth muscle cells. The presence of vacuolo-vesicular clusters in the endothelial layers (marked with an arrow in Fig. 7D) of the vessels, the excess area of surfaces of neighboring endotheliocytes resting on each other (Fig. 7D), etc. indicating that they also belong to pericytic venules.

Conclusion. Location of the veins in the subcapsular area and piercing the ganglion capsule on diagonally, by increasing or decreasing the postcapillary resistance due to the influence of the intraganglionic pressure, ensures the maintenance of the internal hydrostatic pressure at the proper level.

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BLOOD FERRITIN LEVEL WHEN IRON OVERLOADED IN CHILDREN WITH B-THALASSEMIA

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Abstract

The aim of this study was to determine the changes in serum iron and ferritin concentrations in patients with β-thalassemia receiving Desferal therapy. 125 patient with β-thalassemia was examined. 68 of them were boys and 53 were girls. The control group consisted of 20 healthy people. Depending on the clinical course of the disease, the examined patients were treated with desferal in different doses. After taking Desferal, the concentration of ferritin in the blood of patients was determined. Thus, the decrease in the concentration of ferritin depends on the dose of Desferal. Thus, the use of desferal therapy in the treatment of β-thalassemia patients has been shown to be appropriate. The determination of ferritin in the blood serum can play an important role in maintaining the normal level of liver and spleen function in this group of diseases, allowing for accurate selection of desferal dose dynamically.

Keywords: thalassemia, ferritin, desferal, β-thalassemia, iron

One of the main reasons for the development of complications in diseases that require regular replacement of the erythrocyte mass is iron deposition in organs and tissues [1,2]. Among these diseases, β-thalassemia has an important place[3,4]. β-Thalassemia is caused by a defect in the synthesis of only the β-chain, it is divided into β+ thalassemia, in which the synthesis of the β-chain is preserved, and β^0-thalassemia synthesis of the β-chain is completely absent. β^0 - and β^+ - thalassemia are characterized by the accumulation of iron in various organs [5]. The human body is well adapted to the accumulation of iron from the outside in iron deficiency states, or in anemia, as well as to a decrease in the utilization of iron from the macrophage system during inflammation [6].

It is possible to eliminate excess iron by using iron-removing compounds, i.e. drugs that can bind iron and remove it from the body[7]. The main medical iron chelator drug available to physicians is currently time is desferal (desferrioxyamine) [8]. The optimal dose of Desferal can be calculated by determining the total amount of iron and ferritin received by the patient and the amount of metal excreted from the body as a result of the use of various doses of Desferal [9].

Materials and research methods. 125 patients (68 boys and 53 girls) with β-thalassemia major were under observation. The control group consisted of 20 healthy individuals. The diagnosis was made on the basis of the determination of the hemoglobin fractions HbA2 and HbF using the isoelectric focusing method on polyacryl-ampholine plastics with a pH of 3.5-9.5 using a Multiphor 2117 instrument from LKB (Sweden). The amount of ferritin was determined by enzyme immunoassay using a Stat Fax apparatus (USA).

Results.In patients with β-thalassemia, the amount of Hb is 3.4 times, erythrocytes - 1.76 times, hematocrit 1.5 times less than in healthy. Hemoglobin fractions in patients with β-thalassemia showed an increased level of HbF, it was found to be 60.5±2.1%, which is 42.6 times higher than in healthy individuals. The amounts of HbA2 in both groups were similar; in patients 1.42±0.08% (norm 2.07±0.14%). When studying iron metabolism in patients with β-thalassemia, an increased content of serum iron and ferritin was revealed. The level of serum iron in patients with β-thalassemia was increased 1.6 times, 33.7±2.5, serum ferritin was 2254.6±186.3 31 times compared with the control group. After the first intake of Desferal, the average level of ferritin in the blood decreased to an average of 2734.3±358.3 ng/l.

The mean blood ferritin level was 2452.3±373.7 units in patients who received desferal for the second time (29 individuals). At the same time, in half of the cases, the ferritin level did not exceed the limit of 2000.0 units and in 25% of cases were less than 1119.0 units, while a quarter of the patients had rather high rates - more than 3076.0 units, in no patient the ferritin level did not exceed 9450 units. There was a significant difference from baseline (p_U=0.014), which cannot be asserted from the level of the previous Desferal session (p_U=0.294). A more detailed statistical analysis revealed a decrease in ferritin in all patients compared with the previous treatment session. (p_W<0.001).

Conclusions. The regression model can help us to predict the process in further treatment sessions with 95% probability level. Thus, the results of the conducted laboratory studies indicate the expediency of using desferal therapy in the complex treatment of β-thalassemia major as effective. Determining the level of ferritin after each dose of Desferal is the main an indicator of iron stores in examined patients with β-thalassemia major.

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CEREBRAL VENOUS SINUS THROMBOSIS IN NEWBORNS

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Abstract

Venous thrombosis is a pathological condition in which, as a result of the formation of an intravascular thrombus, the blood flow in the tissues is abruptly interrupted or limited. A number of studies have shown that in adults, activation of the blood coagulation system against the background of a cytokine storm due to SARS-CoV-2 led to ischemic stroke and intracranial hemorrhage.An analysis of numerous studies in children with systemic inflammatory syndrome revealed an unexpectedly high incidence of ischemic and hemorrhagic cerebrovascular complications in them. Our article describes the clinical picture of parenchymal hemorrhage, as well as thrombosis of the cerebral venous sinuses in a newborn, which developed as a result of a multisystem inflammatory syndrome associated with SARS-Cov2.

Keywords*:* newborn, multisystem inflammatory syndrome, cerebral venous sinus thrombosis.

Introduction. Thrombosis of cerebral (brain) veins and venous sinuses is a rare disease that occurs as a result of the formation of a blood clot in the venous sinuses of the brain, has a severe clinical course and results in a number of complications [1,2].

Unlike arterial thrombosis, thrombosis of cerebral veins and venous sinuses is more common in young people and children and accounts for less than 1% of all stroke cases. In newborns, the incidence varies between 1-12/100,000 [3,4]. Recent results from the International Pediatric Stroke Study show that more than half of all cerebral sino-venous thromboses diagnosed in childhood occur in the neonatal period, and are more common in boys than in girls.

Violation of the body's hemostasis system can be cited as the main reason for the development of thrombosis in cerebral veins and venous sinuses. Due to a number of different infectious and non-infectious causes, hemostasis system disorders can develop, so during the current pandemic, it is often found in patients with COVID-19 [7]. It should be noted that at the end of April 2020, SARS-CoV-2 among children in many countries It has been reported that a multisystem inflammatory syndrome-MIS-C (Multisystem Inflammatory Syndrome in Children) developed due to infection and had a severe course [8]. It has been seen that this clinical picture develops after 4-6 weeks, mainly in children, when they are infected with COVID-19, and is accompanied by a violation of the function of many organs, as well as hemostasis, including neurological complications [9]. A review of multiple studies in children with MIS-C found ischemic and hemorrhagic cerebrovascular complications, as well as an unexpectedly high rate (34%) of neurological symptoms [10,11,12].

In our article, the clinical picture of parenchymatous hemorrhage, and cerebral venous sinus thrombosis in a newborn developing multisystem inflammatory syndrome related to SARS-Cov2 is described.

Material. Patient ZM (medical card - 006253/764209), a 15-day-old girl, was admitted to our clinic from home in a serious condition. It is known from the anamnesis that the child was born in one of the small clinics, I pregnancy, I delivery. He was discharged home on the third day of his life. During the current pregnancy, the mother was infected with SARS-CoV-2 infection at 37 weeks of pregnancy. Currently, he has been ill for 2 days and has a high fever.

His condition was very serious when he entered. Continual convulsions were observed by the CNS, the neck muscles are rigid, the patient is in a compulsive state, convulses, reflexes are absent, and his gaze is fixed on one point. The leather covers are worn and pale grayish in color. Respiration is shallow, and tachypnea is noted. SpO2 values are normally. Heart tones are deafened, and pulse is arrhythmic. His belly is soft. Physiological acts were not observed during the examination. Considering the patient's condition, he was admitted to the intensive care unit for examination and treatment.

The patient was immediately assisted: anticonvulsant measures were taken, he was placed in a bathtub, monitoring with nasal O2 support was started, the patient was monitored by a monitor, peripheral vascular access was opened, NQZ was inserted, and the bladder was catheterized. USM of the brain was immediately performed - GRADE III bleeding was observed, brain MRI was advised. A SARS Cov-2 swab was taken from the child, the result was negative. Full parenteral nutrition, anticonvulsant treatment and empiric antibacterial therapy were started, platelet mass was transferred due to low platelets, clexan was added to the prescription according to the hematologist's decision.

Despite intensive therapy, no positive dynamics were noted in the patient's condition, cardiac arrest was noted on the 7th day of treatment, bradycardia continued despite resuscitation measures, and the patient died.

Laboratory tests carried out: blood group: AB (IV) Rh negative (-).

Hemogram: HGB-10.1 g/dl, HCT-28.4, RBC-2.8*106, RDW-16.4, MCHC-35.5, MCH -35.9, MCV - 101,WBC - 10.3, N - 54.1%, lymph-33.9 %, E-0.922 %, M-8.86 %, B - 0.224, PLT-37.9, PDW -18.3, PCT - 0.021, MPV -5.52

Coagulogram: prothrombin time+ in R-1.23, prothrombin activation-68.4, prothrombin time-16.2, active partial thromboplastin time-34, D - Dimer-11564 ng/ml, Vitamin B12-486, Ferritin-850.7, LDH-580,

Blood gases: PH-7.320, pCO2-44.5, pO_2-79.0, HCO3-21.6, ABE-3.3, Lac-1.7, SpO2-96.7 %

Biochemical examination of blood: sugar-136 mg/dl, potassium-3.4 mmol/l, sodium-141 m mol/l, calcium-8.5 mmol/l, magnesium-1.75 mmol/l,total protein (blood)-5.09 G/l, albumin-3.2 g/l, total bilirubin-1.74 mkmol/l, creatinine - 0.4 mkmol/l, residual nitrogen (BUN)-4V, AST-109v, alt-72V, procalcitonin-0.13 V, CRZ-1.73 mg/mL, TSH-5.1881 V.

SARS-CoV-2 (İgM) - 0.07, SARS-CoV-2 (İgG)-456.7

Instrumental examinations carried out: Doppler+Color echocardiography: functional open botal flow, IAS aneurysm /secundum ASD.

Chest X-ray (taken on a portative apparatus in an anterior-flat projection): the chest is normosthenic, the intercostal areas and their orientation have not changed. Destructive and traumatic changes in visible bones are not noted. The nasogastral probe is noted. Low-intensity mesh shading of the lung areas is noted on both sides. Enlargement of the lymph nodes around the walls and bronchi is not noted. The diaphragm and sinuses are free.

Heart-condition, shape and boundaries are within the norm The large vessels - the aorta and arterial pulmonalis arcs-unchanged.

Ultrasound of internal organs: the contour of the liver is smooth, its size, parenchyma exogenicity, struktour correspond to age. Focal pathology, which takes place in the liver, is not traced. The hepatic and portal venous system did not change, the intra-and extra-hepatic bile ducts did not expand. The size and walliness of the gallbladder corresponds to the norm, no noticeable stones or derivatives are found in it, the total bile flow has not expanded.

Ultrasound of internal organs: the contour of the liver is smooth, its size, parenchyma exogenicity, structure related to age. Focal pathology, which takes place in the liver, is not traced. The hepatic and portal venous system did not change, the intra-and extra-hepatic bile ducts did not expand. The size and walliness of the gallbladder related to the norm, no noticeable stones or derivatives are found in it, the total bile flow has not expanded.

The dimensions of the spleen related to age, the exostructure of its parenchyma is homogeneous. The thickness ,exogenicity and structure of the pancreas are normal.

The localization, contour and demension of the kidneys related to age. The thickness of the parenchyma is within the norm, the EXO-structure is homogeneous. Noticeable stone or neoplasm are not traced. Pelvicalyceal system did not expand in both kidneys. Pathology in the adrenal glands is not noted. The urinary bladder wall thickness is normal, no stones or neoplasm are detected in it.

Intraabdominal mass, free fluid not traced.

Neurosonography: Subarachnoidal areas and interhemispheric distance are the norm, while their composition is heterogeneous. In the coronal cut, subependymal hemorrhage of a high degree of exogenous structure.Bleeding filling are noted in the frontal horns, trunk and occipital horns of the lateral ventricles. Hemorrhage of larger sizes on the left in the caudothalamic area produces a dislocation of ~ 1 cm from the midline to the right. Choroid plexus is not clearly differentiated against the background of hemorrhage.

A clot is noted in the subarachnoid area in the posterior fossa, in the cystena magna and in the IV ventricle. Color Doppler ultrasound shows turbulent flow in the pericallosal artery.

Result: cerebral hemorrhage Grade III.

Head brain MRT: semi-acute period thrombosis of venous sinuses and related, hemorrhagic venous infarction in basal ganglia, thalamus, intraventricular hemorrhage and territorial ischemic stroke areas in both cerebral hemispheric parenchyma are in favor.

Electroenceologram recorded: iso electric line is traced.

Based on the conducted clinical-laboratory-instrumental examinations, the patient was given the following diagnosis: Diffuse brain hemorrhage Grade III. Thrombosis of venous sinuses (subacute period). Hemorrhagic venous infarction in the thalamus. Intraventricular hemorrhage. Territorial ischemic stroke in the parenchyma of the cerebral hemispheres.

Treatment: Antibacterial, anticonvulsant, anticoagulant, symptomatic .

Conclusion: Thus, our clinical observation shows that as a result of SARS-CoV-2 infection, the multisystem inflammatory syndrome can develop in newborns, which can lead to death by causing intracerebral hemorrhages and ischemic stroke in babies. In this regard, newborns born to mothers infected with SARS-CoV-2 should be constantly monitored for the development of multisystem inflammatory syndrome.

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PEDAGOGICAL SCIENCES

NON-NATIVE CHILD BILINGUALISM: PECULIARITIES AND CHALLENGES

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Abstract
In this article, we discuss advantages and disadvantages of bilingualism, compared to monolingualism; review different strategies of bilingual development and challenges families may face; focus on bilingualism in non-native families outside English-speaking context; and compare two kinds of bilingual development (Bilingual First Language Acquisition (BFLA) and Early Second Language Acquisition (ESLA)).

Keywords: bilingualism, non-native bilingualism, bilingual first language acquisition, early second language acquisition.

Introduction

Child bilingualism is a widespread global phenomenon, though precise statistics are not available. It occurs in different context and for different reasons, in the first place, under influence of objective circumstances, like need for communication and social integration in immigrant and international families, but more and more people make a deliberate choice in favor of raising their children as bilinguals, due to benefits this kind of education promises in terms of social success and cognitive development. As a consequence, there has been an increase in artificially created bilingual contexts, when for communication with their child, parents choose the language, that is neither native to them, nor spoken in the society where the family lives. According to Romanowski (1), who surveyed non-native bilingual (NNB) Polish families, reasons for bilingual upbringing often are: 1. Perceiving a foreign language as a gift enabling a child to experience the world and different cultures first-hand, using it in a free and natural manner. It is important for parents to prevent their children from learning a language in an imposed mode. 2. Foreign language skills are viewed as broadening children's horizons. 3. Intellectual profits and enhanced cognitive development. 4. Practical reasons, such as visiting relatives living abroad, or coping with the foreign language-speaking environment on family's regular business trips.

As argued by De Houwer (2), the term 'bilingual children' refers to typically developing, normally hearing children under age 12 who need to learn to communicate in more than a single language in daily life, leaving unspecified to what extent children are able to communicate in two languages. Another characteristic is that the acquisition of these languages should be untutored and naturalistic, most often occurring as a result of life circumstances that are not easy to change.

Pros and cons for bilingualism-monolingualism from the point of linguistic and cognitive development

Among advantages of bilingual development, research mentions the following:

1. Advantages in vocabulary acquisition

De Houwer (2, 3) argued that 13-month-old Bilingual First Language Acquisition (BFLA) children understand 70% more words than matched monolingual children, including potentially bilingual and Early Second Language Acquisition (ESLA) children. BFLA infants reach a certain amount of total vocabulary 4 more months earlier, than monolingual children. By 13 months, BFLA infants understand translation equivalents.

2. Higher speech processing speed

Serratrice (4) stated that vocabulary size was the feature to which efficiency with the processing of the speech signal in bilingual toddlers was linked; in a study of Spanish–English 2- year-olds' lexicons in a preferential looking task there was observed positive within-language correlations between children's reaction times in the recognition of familiar words and vocabulary size but no significant across-language correlations. Speed of online lexical processing in Spanish showed no correlation with word stock size in English and processing speed in English was relevant for vocabulary size in Spanish. At the same time, processing speed in each language was moderately correlated with a composite vocabulary size comprising all English and Spanish words. It allowed to conclude that general processing skills that play a role in word recognition are not purely language specific.

3. Noncompliance with the mutual exclusivity constraints

In terms of other non-language specific processing skills, another profit of bilingual upbringing and advantage of enhanced word learning is bilingual children's flexibility in learning strategies, in particular, in the application of the mutual exclusivity constraint. The mutual exclusivity constraint hypothesis, suggested in 1989 by Markman basing on Slobin's earlier accounts

of syntax-based language acquisition, states that children have a bias to assume that a new label refers to an unknown object. So, when they hear a familiar sentence with an unfamiliar (made-up) word in the presence of a familiar object and of an unfamiliar object they assume that the unfamiliar word stands for the unfamiliar object. According to recent research on monolingual children, there has been found a maturational component to this bias; this tendency is not innate but develops towards the age of 2 (4).

Studies of translation equivalents in bilingual toddlers' receptive vocabulary revealed that bilinguals between 17 and 22 months old overcome the mutual exclusivity bias not only across languages but within the same language. Due to hearing multiple words for the same referent in their input, bilinguals don't assume that a new word necessarily nominates a new object, and thus, avoid following the mutual exclusivity strategy. It gives bilingual children an adaptive advantage and helps them to develop a parallel lexicon in two languages (4).

4. Enhanced metalinguistic awareness

Language competences developed in acquisition of one language can be beneficial for learning consecutive languages. Research argues the number of languages learnt and the proficiency in them can be linked to metalinguistic awareness. Nevertheless, there is no unanimous understanding of what affects what – language competences enhance the development of metalinguistic awareness or the other way round. It is likely that this is a bidirectional correlation (5).

At the same time, there are a few points of evidence *not speaking in favor* of bilingualism. Here we will discuss only one issue concerning vocabulary acquisition, though there are a few more to follow in the section on the differences between BFLA and ESLA learners.

There is clear evidence that bilingual children 3-10 y.o. persistently do worse in a word-picture association test. This remains true at least for ESLA children, for whom English was a societal language. Nevertheless, all bilinguals are different, and it makes sense to compare them to monolinguals only if the conditions for acquisition are similar (2).

A better way of assessing lexical knowledge in bilinguals is in terms of *total conceptual vocabulary*. Pearson et al. (Pearson's study of 1998 as cited in (4)) argued that, although bilingual children may have smaller lexicons compared to age-matched monolinguals, when one resorts to both languages for words to cover the semantic space the word stock proves to be similar in size regardless of language background, and possibly larger for bilinguals. Data are typically collected on children's receptive vocabulary and mostly only in English, but the studies that have addressed both receptive and expressive lexical skills have revealed that bilinguals' expressive abilities tend to lag behind those of monolinguals.

Maintaining non-native bilingualism in a monolingual context

If multilingual families reside in a place other than the parents' country/ community of origin, they have to construct and sustain their own unique identities and their childrearing and language decisions will be affected by coping with many other difficulties associated with raising children with more than one language and culture (6). Nevertheless, an opposite situation can offer similar challenges.

Non-Native Bilingualism (NNB) is not a recent trend in education and upbringing, and it dates back to as long as a few centuries ago, although recently it is regaining popularity. NNB's underlying assumption is that a parent does not speak his/her native language to the child. NNB implies neither the necessity to assimilate with the environment as early as possible (as in the case with immigration), nor the low status of L1 (subtractive bilingualism), but it is a conscious decision to speak to the child in a foreign language (a parent's L2) in a natural way (1).

In this mode of language acquisition parental involvement and input play a crucial role in the child's linguistic attainment. Nevertheless, as Romanowski (1) underscores, adjusting parental expectations is of primary importance. The input in NNB is bound to be unstable – extremely high in the early age, when the child stays in close contact with the L2 speaking parent, and inevitably decreasing as the child develops more independence. Thus, too high expectations may lead to frustration and abandonment of L2 when difficulties arise (2).

NNB families can vary in their aims. There are parents who want their children to be able to freely communicate in a language, while others may want to bring their children in contact with it, so as to prepare them for a formal instruction which they will receive at school. Achieving both goals will require a different amount of input, which will lead to different proficiency levels. Doesn't matter how smoothly acquisition goes, it is recommended to stay consistent in using L2 to communicate with the child and not resign, because even if no apparent outcomes can be observed, the passive knowledge is believed to constitute a foundation for language learning later in life.

As in NNB families the use of two languages does not result from the natural need to communicate with both parents as in international marriages, or with the society as in immigrant families, *motivation* becomes determinizing in the success of bilingual upbringing. Meanwhile, NNB families frequently face challenges in sustaining stable motivation. It is an often-reported issue, that the child resists L2 communication, as he or she has clear evidence that both parents are able to communicate in L1. In such cases, parents are forced to look for additional motivation, that is often difficult, as L2 needs to be linked to something intrinsically appealing, and the level of this connection has to be high and stable. As examples of such motivating outcomes of communicating in L2, there can be mentioned reading favorite books in original, watching favorite cartoons and singing songs together with parents, being able to communicate with peers in a bilingual kindergarten or

school, or with an L2-speaking babysitter, keeping in touch with monolingual relatives or travelling abroad (2). Nevertheless, to make the implementation of these recommendations successful, the parents have to establish and maintain close and trusting relationships with the child. Thus, when it comes to learning, it is the parents' responsibility to make learning L2 an attractive experience and not to impose it on the child, as this will likely discourage him or her from using it. As in NNB families, intrinsic motivation drives the whole process, both parents and children should stay motivated to ensure consistency of the process and prevent emergence of affective filters.

Apart from sustaining high motivation, another success-determining factor is the amount of L2 input. Parents should be mindful about it, and control the amount, if necessary, deliberately. According to Romanowski, 'a crucial element in catering for the child's need for a meaningful interaction in both languages are conversations' (1).

In order to internalize chunks of language the child needs a sufficient language input to analyze. It has been estimated, that about 30% (25 h a week) of all interactions should take place in L2, 20% (15 h a week) being the absolute mandatory minimum. Moreover, the most efficient acquisition takes place when the child is addressed directly, and is actively engaged in interaction. Active sources of language (talking, playing, reading) ensure higher efficiency than the passive ones (audiobooks, TV), as communication with other people in itself constitutes additional motivation (1). Actually, building up sufficient input flooding, does not have to be extremely challenging, and the most straightforward way to do, apart from direct communication, it is to comment on the events and pictures while reading books as well as to interpret the emotions of the characters. It will provide appropriate *frequency of natural repetition* for the child to internalize language chunks.

In addition to providing sufficient linguistic input, it is important to apply *the child-centered mode of interaction*; it is advised to encourage their attempts to communicate through adopting such habits as active listening and letting them talk. To demonstrate interest in the conversation, adult interlocutors should ask open-ended questions, prompt lacking words and praise any production effort in the form of I-messages ("I'm glad that you speak my language"). Mistake correction and feedback should not be the main priority and break the flow of the conversation.

There is a tendency in bilingual parents to mix their languages, that can provoke unnecessary code-switching in children. If such problem arises, it is worth providing the child with a monolingual L2 interlocutor. It will require linguistic adjustment on the child's part, as prevent from resorting to code-switching to cover total conceptual vocabulary. At the same time, it will assure receiving a high-quality input, not influenced by code-switching and interference, which are common in the speech of non-native speakers (1).

Strategies of communication in the family

Adopted strategies vary across NNB families, but they should aim at the same goal of providing consistent and sufficient input. It may be necessary to adapt the chosen strategy to changing linguistic circumstances, for example increased input in societal language when the child starts a monolingual L1 kindergarten or school, and L1 becomes prevalent in their environment. Statistically, One Parent One Language (OPOL) strategy remains the most frequent in maintaining NNB.

Its advantage is that the child learns to associate a language with one of the parents, and it facilitates the choice of language to address them. It also clarifies parents' expectations of what language the child should use to respond, and helps interpret the child's first utterances. If parents are consistent in their language use, the child will develop what is called a person-language bond, that will help to make code-switching more controlled and systematic.

OPOL strategy proves to be an effective approach, because each of the languages is equally reinforced, but this may stop when the child starts kindergarten or school, and L1 exposure increases. To avoid L1 dominance, the change in approach might be required, and Minority Language at Home strategy, where both parents speak L2 at home and L1 outside the home, can be helpful. A place is considered to be the factor which triggers the language switch. This strategy provides the child with a greater exposure to L2 than in the case of OPOL. For some proponents of this approach, the place factor can be replaced with particular times when the whole family switches into L2. It can be a particular time of the day or on certain days of the week, when it is most convenient and natural to practice, or time allocated to particular routines, e.g., a visit to L2 relatives or friends, when speaking L2 is most logical. This strategy as a good option for parents who do not feel comfortable speaking L2 at all times, and whose language abilities may not allow for it.

Another option of NNB maintenance is Minority Language Immersion, when L2 is spoken by both parents at all times (at and outside home), except in the presence of those who do not speak L2. After 4–5 years, when L2 becomes considerably established, the family can switch to L1. This approach is also referred to as 'one-language-first' strategy.

Another way is Mixed Language Policy strategy, when both languages are used interchangeably, and the choice of language depends on the topic discussed, participants of the conversation, etc. It might not be 100 percent reliable as the main strategy of teaching the child L2 and maintaining it as strong as L1, as language choice is largely accidental, and there is a risk of the child not getting a sufficient input. In this case the parent should take charge to balance the amount of input in both languages.

Issues related to NNB upbringing

There are a few factors that NNB parents anticipate or face in the process of bilingual upbringing that are typically perceived as negative. In fact, it is not necessarily so, moreover, some of them contain hidden possibilities for cognitive development. These factors are:

1. Parents' L2 is not flawless

If a parent assesses their L2 proficiency as insufficient, it can prevent them from making a decision in favor of bilingual upbringing. Nevertheless, there exists research (cited in (1)) performed by an American professor of neurology Elissa Newport, who basing on her study of a deaf child learning a sign language from their deaf parents' grammatically compromised speech, concluded that the child is able to process the language far outside the input and reconstruct correct grammar rules. According to this study, a much higher level of grammatical correctness can be developed even after receiving input with occasional mistakes.

Nevertheless, it is not very clear, how low parents' proficiency can be for NNB childrearing to lead to a successful outcome. Nowadays, it is a growing trend among educators to promote the idea, that bilingualism in the child can be developed by a parent who is just a few steps ahead in L2 development compared to the child. Programs based on glossaries and situational speech scripts for parents are widely sold, advertised by claims that roleplaying these situations with a child as a part of time-bound Minority Language at Home strategy will lead to bilingualism. So, there should be limits to optimistic attitude to low L2 proficiency in parents, because the lower L2 level is, the more it has to be compensated by other factors, such as time and effort allocated to preparation for L2 speaking episodes, that will inevitably affect motivation and consistency.

2. Parents' limited vocabulary, compared to native speakers

Another issue related to the acquisition of lexis is that the child might ask for a word that a parent does not know. In fact, this obstacle opens two important doors in cognitive development; the first one is awareness that no one knows all the words of a language, even native speakers, and there are ways to expand one's thesaurus. The second door is understanding that not knowing a particular word does not have to necessarily hinder communication, and there are compensatory strategies, such as finding synonyms or giving definitions, that will allow to sustain communication if reference materials are not at hand. After the necessary vocabulary-learning or compensatory strategies are taught to the child, the mail parents' responsibility is to help the child use the newly-acquired word as frequently as possible to ensure its internalization. Moreover, when conceptual gaps are identified, it is advisable that both parents provide assistance in both languages. Limiting this kind of assistance to one parent and one language might hinder the child's inborn curiosity and slow their linguistic development. Providing equivalents in both languages will, on the contrary, add to total conceptual vocabulary.

3. Unwanted code-switching/objecting to speaking L2

A common complaint among NNB families is that the child refuses to speak L2 and/or switches into L1 every time when additional effort in L2 is required. The older the children get, the better they realize that both parents speak L1, and speaking L2 starts to seem unnatural and unnecessary. Implicit encouragement, like false 'misunderstanding' of the unwanted language on the part of the parents, can bring to stronger protest. A softer way, according to Romanowski (1), could be to ignore the switch and continue the conversation in the correct language. At least, it would provide input and help the child to fill lacks and gaps that could have possibly triggered the switch.

Nevertheless, there are cases, when parents should not insist on the use of L2, for example, in the situations that are emotionally difficult for the child, or when the child gets hurt. It is only after the outbreak passes, and safety is restored, that the events can be recounted in L2.

Costa (7) in his book 'The Bilingual Brain' argues that expressing stronger emotions in dominant language is more natural than in L2, that was learnt in an academic context, as the lack of social experience in this language, restricted to the classroom, could imply a reduction in the emotional response in that language. Apart from that, emotional distancing allows better decision-making, as speaking L2 leads to considering more deliberative and logical criteria than speaking the native language. Thus, basing on abovementioned and my own experience of using OPOL method, we would hypothesize that code-switching can be strategically applied by NNB parents, for instance, for more effective anger and anxiety management, or the other way round, for establishing better emotional connections with the child in the situations of happiness or closeness.

Basing on a study of 22 Polish families, Romanowski (1) stated that 'code-switching was observed in 15 cases (68.2%), lexical transfer in 10 families (45.4%) and grammatical transfer in 6 families (27.3%). Another 6 families (27.3%) noticed other examples of code-switching behavior. i.e. shifting individual words, phrases or even sentences. The parents unanimously noticed that this occurs when their children cannot find a proper word in the language used or when a concept can be *more easily expressed in another language*. Lexical transfer was the second most common behavior, and far more ubiquitous than grammatical transfer.

Negative factors of NNB upbringing

There are a few aspects of interpersonal relationships within a family that don't look menacing at the beginning of NNB upbringing, and yet they can get damaging in the process. The degree of this impact should not be underestimated considering how long-term and consistent any L2 communication strategy needs to be to achieve any effect in language acquisition. According to Wang, the following aspects of family wellbeing are at risk:

1. Communication involvement

In OPOL families, when one parent has either zero or limited understanding of L2, the quality of family

communication suffers. Even if the family choose to relay or translate the conversation for the parent who does not understand the language being used, a lot of subtle, yet valuable information carried in the conversation will be lost. Even though the translation a may be beneficial for children to learn how to express the same ideas in different languages and for parents from different linguistic and cultural backgrounds to use the opportunities to learn from each other (6), such a communication process tends to break the natural flow of conversation and can prevent participants from going deeper into the topic and continuing communication.

Moreover, such a limited communication pattern might bring up a wall between the family members, reducing time when they converse together. It will eventually lead to increasing sense of isolation, and the left-out family member will grow indifferent to what is said by the others. In the long run, there might be a risk of spillover - a negative emotional reaction transferring to other areas of family life.

2. Direct communication

In OPOL families, children may acquire a habit of 'telling on the other parent' or 'gossiping about the other parent' in their presence, believing that the other parent will not know what is being said (6). We struggle to assess, how much this trait is linked to bilingual upbringing, because we observed its bright manifestation in both bilingual and monolingual children. Probably, it would be logical to assume, that one parent's irresponsiveness to one of spoken languages could create more fertile ground for this kind of manipulative behavior, but more focused comparative research could be useful.

3. Psychological and emotional needs of children

During adolescence, thorough and dynamic child–parent conversations are necessary to understand the psychological and emotional needs of children and provide adequate support (6). This parent–child interaction can only be built in frequent communication, which is crucial for adolescent development and adaptation. Being connected by warm and close relationship, while still developing a sense of self in bilingual families can be impeded by limited proficiency of one of the interlocutors in one of the spoken languages. The other side of the coin in this situation can be possible loss of non-dominant language as a sacrifice to family liaisons.

4. Development of accountability

In NNB families, parents serve as the major conversational partners of children as well as the major L2 input providers. So, they might grow 'indulgent in ratifying children's versions of events' (6), and language used to present them, because they set and control the conversation context and are aware of their children's L2 limitations. This may result in the lack of children's accountability for making themselves understood and deepening the conversation.

5. Parental expectations

All the NNB upbringing-related issues discussed in the previous section contribute to wrong expectations on the parents' part, making them either overly anxious, or not farsighted enough. Social media only add to the distorted image of multilingual childrearing. Many parents do not have clear understanding of their own situation and circumstance to be realistic about the challenge. Others perceive the request for consistency as something that has to be done at all cost. Needless to say, that it may result in unrealistic goals and eventually, in failure to achieve bilingualism, if not something worse. To tackle risks and possible problems, parents from monolingual environments are highly encouraged to seek support that goes beyond the language itself. To be understanding towards their children in their endeavors to acquire two languages simultaneously, parents ought to broaden their knowledge on the topic of bilingualism by reading relevant literature (1).

Differences between Bilingual First Language Acquisition (BFLA) and Early Second Language Acquisition (ESLA)

Looking at how NNB families assess their experience of bilingual parenting, Romanowski (1) found that the most popular regrets were too late beginning and insufficient input. Leaving aside that latter as undoubtedly the key factor to successful bilingual development (Gass & Mackey (8) call input 'sine qua non' of acquisition), the first argument deserves closer attention. 'The earlier, the better' is a common misconception about developing bilingualism, and as it was proven by the joint findings from studies on child bilingual development in naturalistic settings, it is not a universal principle, and is subjected to influence of many different factors (9). Naturally, different language learning environments (BFLA, ESLA, and SLA) set different trajectories of bilingual children's language acquisition by the age of 10. Outcomes can also vary, and not necessarily lead to mastery of both languages, like in cases of sequential bilingualism, when next language takes over the previous one. Another important issue to acknowledge and remember, is that not only learning trajectories, but also personal and family experience of children in BFLA and ESLA will be different.

It's worth mentioning, that in general, BFLA is three times more frequent than ESLA, because usually both the language of the society (SocL) and one other language (non-SocL) are spoken at home. In BFLA L2 input begins from birth, simultaneously with L1, that should not be confused with *simultaneous bilingualism*, when children learn different languages in the 3 first years of their life. It's different from BFLA, where children hear 2 languages from very beginning. Simultaneous bilingualism is a vague term and stands closer to ESLA, where regular L2 input begins in preschool years (2, 9). To further underscore the opaqueness of the term, it's important to remember, that De Houwer (2) distinguishes between L1 and L2 in BFLA and ESLA, referring to them as Language-A and Language-Alpha in the former and L1 and LX in the latter.

At the same time, considering the wide variety of bilingual contexts, it is worth mentioning, that L-A/L1 and L-Alpha/LX do not directly correspond to SocL and non-SocL, and their equivalence should be discussed separately for every context.

The first and most notable difference between learning trajectories in BFLA and ESLA, is that in terms of *comprehension*, in BFLA increase in

knowledge of L-A and L-Alpha happens simultaneously, from birth till age 1, and also later, till next milestone at the age 6 and further. In ESLA, comprehension of L1 forms by age 1, following the same pattern in further development too, while comprehension of LX develops much later, though also showing development until age 6 and up.

In terms of *production*, most children in BFLA start producing both L-A ad L-Alpha by age 2, and increase their knowledge by 6 and up. In ESLA, though the increase of knowledge never stops, and continues till age 6 and further, LX production starts much later (3).

Arguments for and against BFLA and ESLA strategies

Within these general tendencies discussed above, De Houwer (9) distinguishes between variations that fall into a few frequently observed patterns, representing possible language development within given age groups:

Table 1

Four patterns of language use in BFLA children age 1-6

	Understands L-A	Speaks L-A	Understands L-Alpha	Speaks L-Alpha
Pattern 1	yes	yes	yes	yes
Pattern 2	yes	yes	yes	no
Pattern 3	yes	no	yes	no
Pattern 4	no	no	no	no

Table 2

Five patterns of language use in ESLA children age 3-6

	Understands L1	Speaks L1	Understands LX	Speaks LX
Pattern 1	yes	yes	yes	yes
Pattern 2	yes	yes	yes	no
Pattern 3	yes	no	yes	no
Pattern 4	no	no	no	no
Pattern 5	yes	no	yes	yes

As it follows from the data in the tables, despite input in two languages, children may only speak a single language. The number of such cases, according to the research of 2003, can reach 25% (9). According to more recent research of 2018, up to 30% of BFLA children only speak one language, which goes against their families' expectations.

In cases when BFLA children speak only 1 language at home, according to De Houwer (2,9), it's invariably SocL, and thus the probability that they will not speak L-Alpha is much higher.

Nevertheless, ESLA children also risk losing the non-SocL, 'although this loss usually occurs at much older age that in BFLA children, who may already lose it in preschool' (9).

In contexts, similar to Minority Language Immersion strategy, when SocL is not spoken at home, and SocL becomes L-Alpha for BFLA and LX for ESLA the following acquisitional trends can be observed.

Speaking about the acquisition of the *non-societal* language, both ESLA and BFLA children show steady development in *comprehension* at ages 0-6. As for *production*, ESLA and most BFLA start producing output more or less at the same moment, in the second half often second year of life, and the mastery of this skill develops till the age of 6 almost at the same rate as comprehension. Nevertheless, some BFLA – the representatives of those 30% mentioned earlier, show incessant decline in production starting in the second half of the third year of life.

In contrast, in the acquisition of the *societal* language up to the age of 6, no decline was observed, though in ESLA children, *comprehension* doesn't start earlier than at 3, to be followed by *production* even later, around 4,5 years of age. The *time gap* between the beginning of comprehension and the first word-production in non-societal language is the same for ESLA and BFLA – around 8 months, but the same gap in societal language, while remaining about 8 months in BFLA, in ESLA becomes longer, and far less predictable; it can constitute from 1 month to over two years. Evidently, early child care centers, where SocL is most often learnt in ESLA, are not just language acquisition settings, but also the primary socialization units for ESLA children. Therefore, such children have to face a number of challenges, such as being suddenly put in an environment where they understand nothing and cannot express themselves even concerning basic needs. This experience may be traumatizing to a different extent, which possibly explains the longer period, when such children keep silent. Unlike them, BFLA children can avoid this break in communication due to the exposure to SocL they have received before (9).

Another important difference between BFLA and ESLA that might influence the choice between the two strategies, is the *peculiarities of morphosyntactic development in production*.

BFLA children seem to develop morphosyntax for each language separately, so that this aspect of development in one language does not influence on morphosyntax of the other language. This was given a name of Separate Development Hypothesis, and it is argued that BFLA children 'approach the morphosyntax of each language as closed sets' (2), and there is no cross-linguistic comparison. Due to this phenomenon, BFLA children's sentences are undistinguishable from those produced by their monolingual peers in each language.

In contrast, there has been some evidence that the opposite is true for ESLA; there is no separate development for each language, instead, permanent cross-linguistic influence takes place. This causes a few negative effects, such as:

1. Negative L1 transfer
2. Patterns of development are hard to predict due to
a. diversity of specific language pairs
b. the influence of children's L1 proficiency
c. their L2 learning opportunities

Moreover, the same correlation in mutual influence between L1 and 2 is observed in phonological development of BFLA and ESLA; BFLA tend to use appropriate phones and prosodic patterns in each of languages, while ESLA demonstrate clear influence of their L1 pronunciation on their L2.

Conclusion

In terms of advantages that bilingual childrearing can offer, such as enhanced vocabulary acquisition, higher speech processing speed, noncompliance with the mutual exclusivity constraints as an adaptive mechanism, and better metalinguistic awareness, maintaining non-native bilingualism is a worthy endeavor.

Nevertheless, it can be challenging to stay consistent in providing sufficient amount of L2 input to the child. It is crucial to ensure appropriate frequency of natural repetition for the child to internalize language units It is also important to adopt the child-centered mode of interaction, when the child is listened to and encouraged to talk. It might be necessary to modify the amount of L2 input when the child starts L1 pre-school education, to compensate for the increasing input in L1. All these aspects of bilingual upbringing may constitute a significant burden, so, motivation becomes the main driver of NNB, and its levels should be sustained high in both the parents and the child.

Motivation can be badly affected at the very beginning, when parents are worried about their own insufficient language levels, limited vocabulary and possible protest on the child' part. In fact, these factors are not so critical for the success of developing bilingualism, and being treated mindfully, can be turned into developmental possibilities for the parents and the child.

On the other hand, such problems as hindered communication involvement of one parent, issues with direct parent-child communication, when the child keeps 'telling on the other parent', assuming that they don't understand, or when children struggle to communicate their psychological and emotional needs because of lack of fluency, can downgrade the quality of family relationships. Moreover, the child can struggle to develop accountability for their speech, as their L2-speaking parent is their main, and sometimes the only, interlocutor, who can be too indulgent, or used to guessing the meaning from familiar clues.

No matter what strategy is chosen for NNB upbringing - OPOL, Minority Language at Home, Minority Language Immersion, or Mixed Language Policy - it is crucial to remember about differences between learning trajectories of BFLA and ESLA children, and shape expectations basing on that. Even in the first 6 years of life, all bilinguals are very different, and this is an important factor for parents and educators to inform their decision making. BFLA and ESLA children are different in terms of comprehension and production in L2. They face different struggles, for instance, BFLA children can lose non-SocL when input in SocL increases, and they might do worse in word-picture association tests. In turn, ESLA children can keep silent for as long as 2 years and suffer from severe frustration being suddenly exposed to SocL. Also, in ESLA children, there is no separate development for each language, and permanent cross-linguistic influence takes place with quite a few negative effects to follow. They frequently resort to negative L1 transfer to compensate for lacks in L2, their developmental patterns are hard to predict because of the influence of children's L1 proficiency, L2 learning opportunities, and diversity of specific language pairs.

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PHILOLOGICAL SCIENCES

THE PHONETIC AND GRAPHIC ASPECTS OF REALIA-WORDS

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Abstract

During intercultural communication, translators often encounter words and phrases with certain cultural suggestions and references called realia-words.

This article explores the significance of the phonetic and graphic aspects of realia-words in the process of translation and cultural message transmission. By examining elements such as sounds, accent, intonation, punctuation marks, capitalization, and diacritics, we delve into how they contribute to the creation of coherent and authentic texts that are in harmony with cultural specificities. Correct utilization of these aspects not only aids in avoiding confusion and pronunciation errors but also ensures the preservation of authenticity and clarity in the conveyed message. Attention to the phonetic and graphic aspects of realia-words is essential in achieving accurate communication and conveying cultural values effectively. Through an in-depth analysis, this article emphasizes the role of these linguistic elements in fostering precise cultural transmission and facilitating a deeper understanding of diverse cultural experiences.

This topic was chosen due to the fact that it is an important aspect of the language and has a theoretical and practical importance, being an object of study for many translators, linguists and specialists in the field.

Keywords: phonetic aspects, graphic aspects, realia-words, translation, cultural transmission, cultural specificities.

Introduction

Realia-words are linguistic units used by both writers and translators of literary texts. In the process of translation, it is necessary to take into account the linguistic peculiarities of realia-words in terms of structure, phonetic and graphic aspects, grammatical form, meaning, etc., in order to create a coherent and homogeneous text. The focus of this paper lies in the thorough examination of the phonetic and graphic aspects, with particular emphasis on examples derived from the Romanian text *Amintiri din copilărie* (I. Creangă) [2]. However, it is important to note that we have also included pertinent examples extracted from English texts such as *Bridget Jones's Diary* (H. Fielding) [6], and *Memoirs of a Geisha* (A. Golden) [7].

The text *Amintiri din copilărie* abounds in realia-words, which refer to specific aspects of Romanian culture. These lexemes are rooted in traditions, customs, landscapes, characters, and events that are specific to Romania and reflect a distinct cultural reality. Through these words, the author manages to create an authentic atmosphere and convey to the readers the emotions, experiences, and cultural peculiarities of his time. These realia-words contribute to the creation of a strong cultural identity and the preservation of Romanian traditions and values in literature. They have a powerful emotional impact and evoke a sense of belonging to Romanian culture and history.

The text *Bridget Jones's Diary* is filled with realia-words that refer to various cultures, such as British, American, French, Italian, Portuguese, German, and others. These lexemes reflect specific aspects of each mentioned culture and add a rich and diverse cultural dimension to the story of the main character. The use of realia-words provides the readers with an opportunity to familiarize themselves with phrases, terms, customs, and traditions specific to each culture mentioned in the text. These lexemes contribute to the authenticity and truthfulness of the narrative, adding a sense of realism and connecting the readers with various cultural aspects and experiences unique to each country. This cultural diversity represented through realia-words from different languages and cultures helps create a multicultural and multiethnic framework.

The text *Memoirs of a Geisha* is a literary work rich in realia-words that refer to Japanese culture. These realia-words contribute to creating an authentic atmosphere and conveying specific cultural details of Japan. These realia-words not only describe objects, practices, and institutions specific to Japanese culture but also bring to the forefront essential aspects of Japanese life and mentality. They help build the atmosphere and cultural context in which the characters' story unfolds and provide readers with an opportunity to familiarize themselves with Japanese traditions and values. The use of realia-words contributes to the authenticity and realism of the text, offering readers a deep cultural and linguistic experience. These words serve to transport readers to Japan, helping them understand and feel the emotions and experiences of the characters more deeply.

The phonetic and graphic aspects of realia-words that we are going to analyze are: sound, accent, intonation, punctuation marks, capitalization, and diacritics.

The sound

Sounds themselves do not have a semantic content, but they allow us to distinguish between lexemes that have different semantic content. For example, the combination of sounds [cot] constitutes a lexical unit

that has a specific meaning (an old unit of measurement [5]). If we change the first sound, we obtain new lexemes with different semantic content: [lot], [pot], [vot], [tot], [iot], [got], [fot], [șot].

The sound, analyzed from a functional perspective, is called a phoneme. Phonemes help not only in identifying different lexemes but also in distinguishing between forms of the same lexeme: *cuptor – cuptorul – cuptoare – cuptoarele – cuptorului – cuptoarelor*; *răzeș – răzeșul – răzeși – răzeșii – răzeșului – răzeșilor.*

Typically, each letter in the Romanian language represents a single sound (i.e., a phoneme). However, there are exceptions:

- a letter can produce different sounds;
- a sound can be expressed by two or three letters;
- a sound can be expressed by a combination of letters;
- a letter may not produce any sound;

1. The letter *a* produces different sounds in realia-words borrowed from other languages: [æ] barrister, [ɑ:] Mark, [eɪ] Mavis.

2. The letters *i* and *y* represent the same sound [i] in realia-words of different origins: *m**i**r, bac**i**, cârpac**i**, lob**y**, Mar**y**, Darc**y**.*

3. The letters *c* and *g* represent the consonants [c] and [g] (***c**orhană, **c**atihis, **c**ăruță, **C**otâr**g**aș, **c**râșmă, **c**ojo**c**ar, **c**otruță, **c**ovată, **g**las*), but also the affricates [č] and [ğ] when they precede the letters *e* and *i (**c**easlov, con**c**ina, **c**eată, **C**iubuc, Cără**g**ița, **c**impoi).*

4. The letter *h* in some realia-words does not represent any sound but indicates the palatalization of the letters *g* and *c*: *Ghindăoanii, Ghica-vodă,Gheorghe, chiolhănos, Chiriac, Costache, chiraleisa*.

The accent

The accent of a lexeme involves the phonetic means of emphasizing a syllable in a word or phrase, such as the intensity of voice, rising tone, or length of pronunciation. Such a syllable serves as a focal point around which the sound entity forming the lexeme is "organized". The accent helps distinguish words that have the same sounds [1, p. 7]. In the Romanian language, the accent can fall on different syllables. For example, the polysemous lexemes: a) *pára* - b) *pará* have the following meanings [5]:

- 1. flame, 2. fruit of the pear tree, 3. denomination given to objects, technical parts, etc., in the shape of a pear.
- 1. a small Turkish silver coin that circulated in the Romanian countries in the 18th-19th centuries, 2. money, 3. to evade an opponent's attack by means of a counterattack in a duel, fencing, etc. The realia-word has the meaning b1.

Accent can play a significant role in determining the meaning of a word in some languages, such as Romanian. Therefore, marking the accent of realia-words can ensure that the intended meaning is preserved in the target language. It also provides clarity and accuracy as it can help disambiguate words that may be spelled the same but have different meanings.

Realia-words are often used to provide context and specificity to a sentence or phrase, indicating the cultural background of the speaker or writer. Accents can be an essential part of a word in a culture, and the absence of accent marking can lead to confusion or misunderstanding.

When a translator introduces a new realia-word into the text, unfamiliar to the reader, the translator should, at least when using this word for the first time in the text, mark the vowel on which the stress falls. Otherwise, there are situations where the mispronunciation of the foreign word remains in the recipient's memory forever. Accent marking is important in translation, especially when dealing with related languages, because in the mind of an ordinary recipient, the lexical proximity of units implies phonetic proximity as well. Thus, the word is not pronounced according to the rules of the source language but according to those of the target language, and naturally, the stress may not fall on the correct syllable. Once distorted realia-words enter mass media texts, they are widely distributed and become fixed in the target language to such an extent that correcting the pronunciation is usually impossible.

Intonation

Intonation constitutes a combination of phonetic features (rhythm, melody, tempo, intensity, timbre) that help express expressive and emotional nuances, as well as syntactic values and categories. Through intonation, we distinguish different types of utterances that have the same composition [1, p. 7]. For example: 1. *A venit Vodă.*; 2. *A venit Vodă?*; 3. *A venit Vodă!* In the first sentence, we state a fact, in the second, we request information, and in the third, we express an emotional state.

Logical or syntactic stress (sentence stress) is a phonetic feature that helps distinguish between utterances that have identical lexical and structural composition. For example: 1. ***Vodă** are să treacă pe acolo.* 2. *Vodă **are să treacă** pe acolo.*

As we can observe from the examples above, stress is studied by phonetics, but it represents an element that helps differentiate words, pertaining to lexicon and morphology. Intonation and logical stress, as elements that aid in expressing the values of utterances, refer to syntax.

Punctuation marks

We have identified the following punctuation marks: the hyphen, the apostrophe, and the period.

The hyphen is used to connect two or more words that are pronounced together. Functioning as such, it serves the following purposes graphically:

- the disappearance or elision of one of the two vowels: *Nic-a lui Costache, Nic-a Petricăi, Nic-a lui Ștefan a Petrei, Nic-a lui Constantin a Cosmei;*
- the dropping of the enclitic article *–l: Podu-Leloaiei, văru-meu Ion Mogorogea;*
- the combination of a noun and a pronominal adjective: *soră-ta Ioana, văru-meu Ion Mogorogea;*
- the writing of compound realia-words: *Valea-Seacă, Târgul-Frumos, Miezul-Păresii, pierde-vară.*

The apostrophe serves the following graphical purposes:

- the absence of the initial digits in the notation of a year: *'82 Pauillac*;
- the possessive relationship in English (genitive case): *Nigel Coles' wife, Audrey, Reader's Digest.*

The period, as a punctuation mark, is used in abbreviations: *I. (=Ion) Creangă, B. (=Bridget) Jones*. Abbreviations containing word fragments are written without a period: *British Telecom (=Telecommunications)*, as well as common abbreviations: *BBC1 (=British Broadcasting Corporation's television channel 1), M&S (=Marks & Spencer), st (=stone), lb (=pound), oz (=ounce).*

Capitalization

Capitalization varies from language to language. However, we can say that it conveys additional information compared to lowercase writing. Regarding realia-words, we have identified the following uses:

1. marking the beginning of a sentence: *Simon is coming round., Crâșmărița, cum ne-a văzut, pe loc ne-a sărit înainte și ne-a dus deoparte, într-o odaie mare, cu obloane la ferești și podită pe jos, unde eram numai înde noi și crâșmărița, când poftea, ca la casa ei., Catihetul, care făcea ziua noapte și noaptea zi, jucând stos, rar venea pe la școală.;*

2. abbreviations: *BBC1 (=British Broadcasting Corporation), M1 (=motorway), M6, RSC (=Royal Shakespeare Company);*

3. graphic distinction between proper nouns and common nouns *(Boboteaza, Vinerea Seacă, Cosmo, Bruce Springsteen, Jamie):*

- personal names (first names, surnames), nicknames: *Alecu Baloș, Ciubuc Clopotarul, Irinuca, Zaharia Simionescu, Ion Torcălău;*
- simple geographical names: *Iași, Bistrița, Moldova, Baia, Siret, Gion, Kyoto, Japan, Shirakawa, Seoul;*
- simple names of holidays: *Moși, Paști, Crăciun;*
- compound geographical names (excluding auxiliary words): *Munții Neamțului, Dealul Omului, Podul de la Timișești;*
- compound geographical names, in which the generic term together with the constituent elements are conceived as a single unit: *Pârâul Cârjei, Valea-Seacă, Târgul-Frumos, Kamo River, Osaka Bay, Inland Sea, Shijo Avenue* (if the generic term is not an organic part of the geographic name, in this case, it is written with a lowercase initial letter: *satul Bălțătești, satul Topolița, mahalaua Pometea, ulița Buciumenii, podul Cărăgiței*);
- compound names of state, political, national or international organizations, institutions, and enterprises: *Japan Coastal Seafood Company;*
- compound names of holidays: *Sâmbăta lui Lazăr, Duminica Mare, Sfântul Dumitru, Sânt Ilie.*

Examples of realia-words written with lowercase initial letters are:

1. names of mythical beings used as common nouns: *strigoi, balaur, zmeu;*

2. names of objects or units of measurement: *catrință, desagă, opincă, ițari, ocă, dimerlie, cot;*

3. names of individuals based on their place of residence: *mocan, humulești*an, *plăieș, polon, neamț*;

4. names of state, religious, military, and political functions: *mitropolit, popă, vornic, vătăman, mazil*.

Diacritical Marks

A diacritical mark is a graphic sign placed above or below a letter to indicate a specific pronunciation or to distinguish between the meanings of two words. The Romanian language uses five diacritical marks: ă, â, î, ș, ț. These diacritical marks have specific appearances and names: breve (Ă, ă), circumflex (Â â, Î, î), and undercomma (Ș, ș, Ț, ț) [8].

The word "diacritic" derives from the Greek word "diakritikos", which means "separate" or "able to distinguish", and is based on the prefix "dia-" meaning "through" and the verb "krinein", meaning "to separate" *[9]*.

In the Romanian language, incorrect writing without diacritical marks can lead to non-existent words, and some of them can be misinterpreted. This also applies to translations from Romanian into English. For example:

Sorce Text	Target Text
Corăbiasca [2, p. 209]	*the Cor**a**biasca* [3] *the corăbieasca* [4,p. 85]
Țiitura [2, p. 209]	*the **T**iitura* [3]
moș Vasile Țandură [2, p. 170]	*old Vasile **T**andură* [3], [4, p. 276]
Mihai scripcarul din Humulești [2, p. 230]	*Mihai, the Humule**ș**ti fiddler* [4, p. 116]

N. Grigorie-Lăcrița states that individuals who write without diacritics demonstrate a lack of respect towards their audience. The correct use of diacritics represents an "indicator of the level of culture and professionalism" [8]. The proper use of diacritical marks in a translation can help not only in avoiding confusion and incorrect pronunciation but also in preserving the original cultural context of the text and making the translation appear more authentic.

Conclusion

The phonetic and graphic aspects of realia-words represent significant elements in the process of translation and cultural message transmission. Sounds, accent, intonation, punctuation marks, capitalization, and diacritics all contribute to the creation of a coherent, authentic, and culturally harmonious text. The correct utilization of these aspects not only helps avoid confusion and pronunciation errors but also preserves the authenticity and clarity of the conveyed message. Thus, attention to the phonetic and graphic aspects of realia-words is crucial in ensuring accurate communication and appropriate transmission of specific cultural values and traits.

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