

RESEARCH REPORT

UKRAINIAN AND POLISH POSTGRADUATE PHYSIOTHERAPY EDUCATIONAL PROGRAMS – A COMPARATIVE ANALYSIS BASED ON THE EXAMPLES OF POZNAN UNIVERSITY OF MEDICAL SCIENCES AND LVIV'S UKRAINIAN CATHOLIC UNIVERSITY

UKRAIŃSKIE I POLSKIE PROGRAMY STUDIÓW DRUGIEGO STOPNIA FIZJOTERAPII – ANALIZA PORÓWNAWCZA POWSTAŁA W OPARCIU O PRZYKŁADY UNIWERSYTETU MEDYCZNEGO IM. KAROLA MARCINKOWSKIEGO W POZNANIU I UKRAIŃSKIEGO UNIWERSYTETU KATOLICKIEGO WE LWOWIE

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ABSTRACT

Introduction

During the last few years, Ukraine has started to create modern physiotherapy and rehabilitation system actively. The western part of Ukraine plays an essential role in this process. In August 2016, a reformed system of classification of professions was officially introduced in Ukraine. It defines the scope of competence of an 'occupational therapist', 'physiotherapist' and 'physician of rehabilitation or physical medicine' professions. The theoretical basis for the divergence of responsibilities and particular qualifications was authorised by the Minister of Health Care of Ukraine in The International Classification of Functioning, Disability and Health.

Aim

The main aim of the study was to compare Ukrainian and Polish Postgraduate Physiotherapy Educational Programs at Poznan University of Medical Sciences (PUMS) and Ukrainian Catholic University (UCU) in the context of the opportunity to acquire the knowledge, skills and social competencies required by the modern concept of physiotherapy and rehabilitation. Additionally, some facts from the recent past of Ukrainian physiotherapy have been described.

Results and conclusion

They are noticeable differences in the development of the discipline and organisation of studies. Studies at PUMS are dominated by specialist subjects comparing with a higher number of introductory and general topics realised at UCU. The proportion of the number of hours devoted to the implementation of the program during the first and the second year

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of postgraduate studies is expressed by ratio 1980/2030 hours (PUMS) vs 1510/1810 (UCU). Significant disproportion also exists between the number of self-study hours for the first and second year (PUMS 480/615 hours vs UCU 1230/1520).

Key words: physiotherapy, education, comparative studies

STRESZCZENIE

Wstęp

W ostatnich kilku latach Ukraina, zgodnie z trendami europejskimi, zaczęła wdrażać reformy w zakresie organizacji świadczenia usług fizjoterapeutycznych i rehabilitacyjnych. W procesie tym istotną rolę odgrywają eksperci z Zachodniej Ukrainy. W sierpniu 2016 wprowadzono w tym kraju system klasyfikacji zawodów, który w odniesieniu do profesji medycznych definiował zakresy kompetencji terapeuty zajęciowego, fizjoterapeuty oraz lekarza rehabilitacji lub medycyny fizykalnej. Podstawą teoretyczną dywergencji zakresów uprawnień i kompetencji zawodowych była autoryzowana przez Ministra Opieki Zdrowotnej Ukrainy, Międzynarodowa Klasyfikacja Funkcjonowania, Niepełnosprawności i Zdrowia.

Cel

Celem przeprowadzonych badań było porównanie programów nauczania na kierunkach fizjoterapii na Wydziałach Nauk o Zdrowiu Ukraińskiego Katolickiego Uniwersytetu we Lwowie i Uniwersytetu Medycznego im. Karola Marcinkowskiego w Poznaniu w aspekcie możliwości pozyskania wiedzy, umiejętności i kompetencji społecznych wymaganych od absolwentów kierunku fizjoterapia. Dodatkowo opisano historię przemian w obszarze fizjoterapii w trakcie ostatnich lat.

Wyniki i wnioski

W pracy wykazano różnice zarówno w obszarze rozwoju dyscypliny, jak i w zakresie organizacji programów studiów. Program studiów na Uniwersytecie Medycznym w Poznaniu (UMP) zawiera więcej godzin przedmiotów specjalistycznych, przy większej liczbie godzin przedmiotów wprowadzających i ogólnych na Ukraińskim Uniwersytecie Katolickim (UUK). Proporcje godzin dla pierwszego i drugiego roku studiów na obydwu uczelniach wyrażone są wartościami 1980/2030 godzin (UMP) vs 1510/1810 (UUK). Zauważalne są również różnice pomiędzy godzinami samokształcenia dla pierwszego i drugiego roku studiów (UMP 480/615 godz. vs UUK 1230/1520).

Słowa kluczowe: fizjoterapia, edukacja, badania porównawcze

Introduction

From the moment of independence in 1991, the Ukrainian state has not been able to maintain the world's pace of changes in the area of medical rehabilitation (Mysula *et al.* 2017). The first steps towards the formation of physical rehabilitation/therapy, as the science and training of the early professionally trained specialists in physical rehabilitation

in Ukraine, began to be carried out by the Lviv State Institute of Physical Culture with the support of Canadian International Development Agency (CIDA) (Ukrainian Association of Physical Therapy, 2019a). The purpose of the project 'Rehabilitation Program in Lviv' was to assist the Institute in developing and implementing a physical rehabilitation training

course (for the first time in Ukraine). The program was conceived as a combination of disciplines in physical therapy, occupational therapy, and also included individual courses in rehabilitation for orthopaedic, neurological, paediatric, gerontological problems and disorders in the activity of the cardiovascular and respiratory systems (Ukrainian Association of Physical Therapy, 2019a). The cooperation was carried out based on agreements between the Institute and the Partners in Healthcare program in 1994 and 1995 years with the validity period until the end of 1997. In 1998, graduates of this program created in Lviv the first regional Association of Physical Rehabilitation Specialists in Ukraine. One of its tasks was to unite professionals and defend their rights through the establishment of standards for rehabilitation, development of requirements for quality and volume of rehabilitation services, promotion of professional development level of specialists and scientific potential of the industry (Ukrainian Association of Physical Therapy, 2019a). The Ukrainian Association of Physical Therapy was founded by the Constituent Assembly, which took place in September 2007 on the initiative of the Lviv Regional Association of Physical Rehabilitation Specialists. This event was preceded by an almost two-year organisational period during which centres were created in 16 regions of Ukraine. The Association is registered by the Ministry of Justice of Ukraine as an NGO All-Ukrainian Physiotherapy Association & Resorts. The creation of the Association has determined a new stage in the development of physical therapy in Ukraine. As we know, the purpose of physical therapy is to achieve maximum independence, optimal bodily functions and optimal quality of human life. The Association sets for itself the goal which includes forming the status and promoting the development of the profession of 'physical therapy' to assist the appropriate level, volume and quality for those who need it. From this date, all Association's and their

participants' actions are supported by a Code of Ethics (Ukrainian Association of Physical Therapy, 2019b). Between 2008 and 2011, the international MATRA project 'Improving the quality of life and standards for services for disabled children through the development and development of civil society in Ukraine' was implemented by physical therapists. The MATRA project, backed by the Government of the Netherlands, started its activity on October 1, 2008, and lasted for 3 years. The participants of the project were the following Ukrainian organisations: the National Assembly of the Disabled of Ukraine, the Lviv Children's Training and Rehabilitation 'Dzherelo', the Lviv Regional Association of Physical Rehabilitation Specialists (Ukrainian Association of Physical Therapy, 2019a). In this case, partners from the Netherlands are SOFT Tulip Foundation, Socires Foundation and Dutch Royal Association of Physical Therapy. The goal of the project is to provide adequate services and to stimulate integration into the society of children with disabilities through the development of service providers, civil society and policy change. Starting from 2016, the project TEAM Ukraine began work in Ukraine. The purpose of this is to train rehabilitation teams and rehabilitation specialists up to the end of 2019 (Ukrainian Association of Physical Therapy, 2019a).

In all years of the establishment of physical therapy, some legislative changes were made at the level of the Ukrainian Government. In 1998, at the presentation of the Department of Physical Rehabilitation of the Institute of Physical Rehabilitation, the profession of 'specialist in physical rehabilitation' was introduced into the classifier of specialities in Ukraine. From this date, Ukraine has started to create a modern rehabilitation system actively. From August 2016 in the national classification of professions new names of occupations appeared, and an International Classification of Functioning, Disability and Health was an initiative to implement by the Ministry of Healthcare of Ukraine (Mysula et al. 2017).

The Order of Ministry of Economic Development and Trade of Ukraine (2016) by the Order No. 1328 introduced amendments №5 to the National Classifier of Ukraine DK 003: 2010, in particular under the code 2229.2 'other professionals in the field of medicine (except nursing and midwifery)' the professional name 'physical therapy'.

Taking into account the urgency of the problem, the idea of creating a rehabilitation department in the Lviv Clinical Emergency Care Hospital was initiated in 2008 by the city health department. In 2009 was developed, project-budget documentation for the repair of this department. In 2013, an examination of the design documentation was conducted. Due to the lack of funding, construction work started in 2015 (Clinical Municipal Communal Emergency Hospital Lviv, 2019). In 2018, two Early Intervention Cabinets were opened for children from 0 to 4 years old.

In November 2018, representatives of the Ministry of Health together with members of the Board of the All-Ukrainian Physical Therapists Association take part in the first meeting of the Polish Chamber of Physiotherapists (KIF, Krajowa Izba Fizjoterapeutów) (Warsaw, Poland). In October 2018 the newly established Department of Physical Therapy and Occupation Therapy of the Ukrainian Catholic University began its work (Ukrainian Catholic University, 2019).

December 2018 becomes rich in events in the field of Physical Therapy because of two major law acts. By the Order of the Ministry of Health of Ukraine (2018) dated 13.12.2018. No. 2331 (On Amendments to the Catalogue of Qualification Characteristics of Professions of Employees. Issue 78 'Healthcare') the qualification characteristic for the physical therapist (pp.10–13) and the assistant physical therapist (pp. 15–17) was announced. At the same time the Order of the Ministry of Education and Science of Ukraine (2018), dated 19.12.2018 No. 1419 (On Approval of the Standard of Higher Education in specialty 227 'Physical Therapy, Occupational therapy') introduced regulations for the first

(bachelor) level of higher education. Through the precedent of Ukrainian experience in the last twenty years, the necessity of introducing physiotherapeutic education systems at the academic level has arisen. Starting from the 1st of October 2018 Ukrainian Catholic University in Lviv organised at the Faculty of Health Sciences first 2-years 'magisterium' program for physiotherapists allowing comparing the physiotherapy education system in Poland and Western Ukraine.

The second reason justifying the comparison of educational programs are differences in the development of the discipline. Accordingly to the World Confederation for Physical Therapy (WCPT) report (World Confederation for Physical Therapy, 2018) sharp differences between Ukrainian and Polish organisational levels in physiotherapy occurred. 2300 WCPT members were registered in Poland, while in Ukraine only 158. Only 0.4% of active Ukrainian physiotherapists (from $n = 35\,000$) are members of the Ukrainian Association of Physical Therapy, while the mean for the European region reaches 26%. It resulted from a lack of local legal regulation in the physical therapy area. Currently, year-to-year (2017 vs 2018) the number of registered Ukrainian physiotherapists increased by 11%. The number of practising specialists in physiotherapy is higher in Poland (max. 15/per 10000 inhabitants) than in Ukraine (max.10). Until 2018 Ukrainians physiotherapists usually were hired on different workplaces (e.g. nurses, medical supporting staff), performing their duties in hospitals. Close to 80% of active specialist is not related to professional organisations. Notwithstanding, with existing differences between the level of field development in both countries some remarkable similarities in education organisation has been noticed.

Aim

The main aim of the study was to compare Postgraduate Physiotherapy Educational Programs realised at Poznan University of Medical Sciences (PUMS) and Ukrainian Catholic University (UCU) in the context

of the opportunity to acquire required the knowledge, skills and social competencies. At both universities, training takes place at the faculties of health sciences, giving the possibility of direct comparisons. Additionally, some facts from the recent past of Ukrainian physiotherapy have been described, pointing to the significant role of bottom-up processes from Western Ukraine.

Material and methods

A desk research method was used to compare both educational systems. The desk research involves collecting and analysing existing data, i.e. official statuses, terms and regulations, educational programs, reports and scientific research. In this particular case, both UCU and PUMS postgraduate physiotherapy educational programs and plans were analysed. The analysed subjects from the study programs have been grouped into sub-categories using the method of competent judges (judgement consensus). Finally, the research was supplemented with conclusions from direct observations made during the scientific internship program. In February 2019, PUMS' academic staff (prof. Przemysław Lisiński, dr Marcin Cybulski & dr Bogusław Stelcer) participated in a 4-week academic training organised by

the Faculty of Health Sciences UCU in Lviv, Ukraine.

Results

Students of the 1st year SUM (Studia Uzupełniająca Magisterskie, Complementary Master's Degree Studies) of physiotherapy in Poland, as well as in Ukraine, are obliged to obtain 60 ECTS points (European Credit Transfer System) during the academic year. As a part of the course to choose, the Polish first-year student in SUM selects, apart from subjects common for the entire year, one teaching path of two proposed. However, a careful analysis of the curricula in both analysed cases reveals many significant differences. The first year of study in PUMS is dominated by specialist subjects comparing with a higher number of introductory topics realised in UCU. This is due to the specificity of recruitment. PUMS studies require completion of first-degree studies in physiotherapy, Ukrainian recruitment is more liberal and allows students with more diverse knowledge and skills (e.g. practitioners in physiotherapy, ergotherapy & manual therapy, medical and nursing graduates). Identified discrepancies in the implementation of curriculum content during the first year of postgraduate studies are presented in Table 1.

Table 1. PUMS vs UCU – a comparison of curricula for the first year of complementary master's studies

PUMS		UCU	
Subject	ECTS	Subject	ECTS
Mandatory subjects for all students			
Physiotherapy in the main areas of medicine	20	Physiotherapy, ergotherapy and universal design and auxiliary equipment in the main areas of medicine	30
Social sciences (general academic)	3	Social sciences (general academic)	8
Foreign language extended	3	Basic sciences in medicine	6
The methodology of scientific research	1	Qualitative scientific methods	3
Master's seminar	5	Terminology of medical rehabilitation	4
Clinical practice	10	Management of the work of the rehabilitation team and teamwork management	6
The subject of free choice from the university offer			
Subjects focused on neurological disorders	18	The subject of free choice from the university offer (in English)	3
Subjects focused on orthopaedic disorders	18		

PUMS covers a total of 1980 hours (including lectures, category A exercises, C-class exercises, seminars and self-study) in the first year of postgraduate studies. Contrary, UCU covers a total of 1510 hours in responding to categories of education. Also, a significant difference is the time devoted to self-education. At PUMS, the number of hours allocated to this form of work is only 480 and at the UCU as many as 1.230 hours (see Table 2).

Discussion

In 2017, the system of educating physiotherapists was changed in Poland (Act on the Physiotherapist's Profession, 2015), which resulted in the introduction at the Poznan University of Medical Sciences' uniform 5-year master's studies. The previous course of studies divided education into two periods defined by the 'Bologna system' (Bologna Declaration, 1999). The first 3-year period ended with obtaining

Table 2. PUMS vs UCU – a comparison of the number of lecture, seminar and exercise hours and for self-study for the first year of complementary mastersstudies

Groups of subjects	PUMS						UCU				
	Lectures	Exercise cat. C	Exercise cat. A	Seminar	Self-study	Sum	Group of subjects	Lectures	Seminar and exercise	Self-study	Sum
Mandatory subjects for all students	125	415	180	140	220	1080	Mandatory subjects for all students	68	62	260	390
Subjects focused on neurological disorders	45	0	220	55	130	450	Professional courses	110	160	540	810
Subjects focused on orthopaedic disorders	50	0	230	40	130	450	Optional basic subjects	16	14	60	90
							Optional vocational subjects	20	30	100	150
							Practical preparation	0	0	270	270
Sum	220	415	630	235	480	1980		214	266	1230	1510

PUMS offers 28 ECTS points to achieve in the second year of postgraduate studies (including the same, compulsory subjects for all and elective subjects as part of neurological or orthopaedic issues). UCU proposed 39 ECTS points in the second year of postgraduate studies (see Table 3).

The proportion of the number of hours devoted to the implementation of the program during the second year of postgraduate studies is expressed by ratio 2030 vs 1810, regarding PUMS vs UKU. Significant disproportion also exists between the number of self-study hours (PUMS 615 vs UCU 1520).

a bachelor's degree with the relevant professional competences and the next 2-year period of education served to deepen knowledge, skills and social competences and was reflected in obtaining a master's degree. Due to the period of 'transient', the Poznan University of Medical Sciences' will for the next 5 years recruit candidates for 'supplementary master's studies' according to the 'Bologna' model. The aim of physiotherapeutic studies is to acquire the knowledge and skills required to plan and implement the program to improve the maximum spectrum of clinical problems, perform functional diagnostics, plan and

Table 3. UCU vs PUMS – a comparison of curricula for the second year of complementary master’s studies

PUMS		UCU	
Subjects	ECTS	Subjects	ECTS
Mandatory subjects for all students			
Physiotherapy in the main areas of medicine	10	Physical therapy and ergotherapy in the main areas of medicine	45
Pharmacotherapy	1	Complications in practice, first aid	3
Basics of management and marketing in the business of a physiotherapist	1	Ergotherapy and work ergonomics	3
Statistic in medicine	1	Quantitative scientific methods	3
Social sciences (general academic)	4	Management of physical therapy and ergotherapy	3
Preparation and exam of the master’s thesis and Integrated physiotherapy exam in clinical disciplines	15	Preparation and defence of the master’s thesis/state certification	3
Clinical practice	10		
The subject of free choice from the university offer			
Subjects focused on neurological disorders	18		
Subjects focused on orthopaedic disorders	18		

Table 4. PUMS vs UCU – a comparison of the number of lecture, seminar and exercise hours and for self-study for the second year of SUM

PUMS						UCU					
Groups of subjects	Lectures	Exercise cat. C	Exercise cat. A	Sem.	Self-study	Sum	Group of subjects	Lectures	Exercise and seminars	Self-study	Sum
Mandatory subjects for all students	75	460	20	150	325	1030	Mandatory subjects for all students	14	16	60	90
Neurological subjects	45	0	230	80	145	500	Professional courses	10	20	60	90
Orthopaedic path	25	0	270	60	145	500	Optional Basic subjects	4	26	60	90
							Optional vocational subjects	64	136	470	670
							Practical preparation	0	0	870	870
Sum	145	460	520	290	615	2030	Sum	92	199	1520	1810

control the effectiveness of the physiotherapy process, conduct vocational training in basic physiotherapeutic procedures and teaching vocational subjects and gaining knowledge

and skills required for independent work in health care units. The dynamic development of physiotherapy in Poland in recent years is associated with the improvement of the

competence of scientific units educating physiotherapists. Besides, the importance of 'industry' scientific associations and the rank of scientific journals is constantly growing. In connection with the above didactics in the field of physiotherapy at the PUMS focuses on maximising the quality of learning outcomes in the area of knowledge, skills and social competences, which is the sum of theory and practice by statutory requirements (Act on health care institutions, 1991; Geryk, 2013). To fulfil the expectations of society and applicable standards, PUMS created a physiotherapists' curriculum. It offers a very broad knowledge of physiotherapy applications in many medical fields, as evidenced by the attribution of this ECTS section to 38 ECTS for the first year of postgraduate studies (including compulsory subjects for all and elective courses as part of neurological or orthopaedic issues) and 28 ECTS points in the second year of postgraduate studies (including the same, compulsory subjects for all and elective subjects as part of neurological or orthopaedic issues). It has been presented in Tables: 1 and 3. While in the UCU, education of physiotherapists refers only partially to the 'Bologna system' (Bologna Declaration, 1999). Actually, only the 2-year post graduate period of education is offered to deepen the knowledge, skills and social competencies of future professionals. Focusing on directional items, UCU proposed indeed very broad knowledge of physiotherapy applications in medical fields, as evidenced by the attribution of this ECTS section to 26 ECTS for the first year of postgraduate studies (including subjects connected with ergotherapy) and 39 ECTS points in the second year of postgraduate studies (commonly with ergotherapy) what has been presented in tables 1 and 3 presented above. Underlining some educational differences between both Universities is necessary. The 'philosophical' profile of UCU enriches of standard, physiotherapeutic educational program about a more general, humanistic nature appear in the curriculum (see Table 1). UCU students meet with the assumptions of

Christian spirituality, bioethics and deontology emphasising the personalistic character of the University. Generally, these issues were attributed to the first year of postgraduate studies as many as 8 ECTS points, which is much higher than the ECTS score 3 related to the implementation of social rather 'secular' issues at PUMS (see Table 1). At the UCU, the emphasis is also placed on the methodology of scientific research, so that after completing the course the student would be able to write and conduct research of master's thesis independently (see table 3). Commonly, during two years of postgraduate education on UCU, 6 points of ECTS is assigned to the methodology of scientific research compared to 2 points of ECTS in PUMS. When comparing curricula in PUMS and UCU, it is worth paying attention to some program differences. For example, only at the UCU are implemented objects shaping the skills of teamwork in the rehabilitation team (see Table 1). While at the PUMS seminars preparing for the defence of the master's thesis are already implemented on the I year of SUM in contrast to the UCU where they are located on II year of SUM. To sum up the differences between the teaching programs at PUMS and UCU, it is worth comparing the hours dedicated to lectures, seminars, exercises and self-study. While comparing the number of hours allocated for the implementation of the program between PUMS and UCU, it is worth noting a few significant differences. For example, in the first year of postgraduate studies, PUMS covers a total of 1980 hours (including lectures, category A exercises, C-class exercises, seminars and self-study) and the UCU 1510 hours (including lectures, category A exercises, C-class exercises, seminars and self-study). Another significant difference is the time devoted to self-education. At PUMS, the number of hours allocated to this form of work is only 480 and at the UCU as many as 1.230 hours (see Table 2). Consistently analysing this aspect of education regarding the second year of postgraduate studies, we can observe similar proportions between

total hours dedicated to the implementation of the program in PUMS and UCU (2030 vs 1810). Additionally, significant disproportion exists between the number of self-study hours (PUMS 615 vs UCU 1520). From another point of view – on the occasion of research on the quality of physiotherapy academic training, Gotlib et al. (2011) presented a comparison concerning hours of first degree studies' lectures in Spain, Turkey, Bulgaria, Latvia and Poland. Accordingly to authors, the mean of hours per year in Poland reaches 966 hours, while in Latvia 1075 (the highest rate) and in Spain – 700 hours (the lowest rate). In our study, the mean number of lectures hours yearly was higher at the UCU (1660 per year), with lower at PUMS (1040). But again – the main role in this score plays a high number of self-study hours. Summarising the discussion, it must be mentioned that in available scientific literature, there is no such comparison in this subject. Partially because of the confidential character of curriculums at universities all over the world. The theme of satisfaction is not the topic not taken up in this analysis. This issue, along with the contents of the curricula, would indicate the actual quality of the education system (Mika, 2013).

Conclusions

1. They are conspicuous differences in the development of the discipline, both in Ukraine and Poland and also organisation of programs for physiotherapy at both Universities.
2. Due to the differences in the recruitment system and students' educational level, the study program at the Poznań University of Medical Sciences contains fewer hours of introductory and general subjects.
3. While maintaining the same number of ECTS points (60 for both Universities), differences in the number of teaching hours are noticeable.
4. A higher number of self-education hours at Ukrainian Catholic University is visible.

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Conflict of interest

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CASE STUDY

THE PALPEBRAL FISSURE NARROWING LEADING TO THE NEUROBLASTOMA DIAGNOSIS – A CASE REPORT

ZWĘŻENIE SZPARY POWIEKOWEJ JAKO PIERWSZY OBJAW NEUROBLASTOMA

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ABSTRACT

Introduction

Horner's syndrome manifests itself by anisocoria, one-sided ptosis, anhidrosis, and enophthalmos. It is caused by an interruption of the oculosympathetic tract. Among pediatric patients, the most common etiology is trauma.

Aim

The aim of this paper was to present a case report of an infant with Horner's syndrome who experienced a fall and had a surgery; however, finally was diagnosed with the neuroblastoma.

Material, methods, results

A 3-month-old patient presented with left-sided ptosis. The palpebral fissure narrowing occurred abruptly in the 4th week after birth. After phenylephrine administration the left eyelid lifted. Lack of the pupils' reaction after the 0.1% adrenaline administration, suggested the diagnosis of the preganglionic Horner's syndrome. Moreover, the left pupil miosis was observed. In the age of 1 month, the operation of the pyloric stenosis was performed. The occurrence of drooping eyelid was connected with the surgery or incident of a fall reported by the mother of the patient. The head ultrasound and thoracic RTG did not show any pathologies. Two weeks after ophthalmologic consultation magnetic resonance imaging was performed and revealed a 1.6 cm mass adjacent to the left subclavian artery. The biopsy of the tumor confirmed the diagnosis of the neuroblastoma. The chemotherapy and the surgical removal of the tumor were performed. The child is in complete remission of neuroblastoma and has been under permanent oncologic care since 3 years.

Conclusion

This case report shows that Horner's syndrome requires vigilance and should lead to cervical and brain MRI examination in children because of the possible neuroblastoma incidence.

Key words: Horner's syndrome, ptosis, miosis, anisocoria

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