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Lung injury patterns in newborns, infants and young children – morphological and immunohistochemical approaches

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Abstract

Lower respiratory infections are an important cause of morbidity and mortality in children, especially in newborns, infants and young children. We conducted a retrospective study and we analyzed the causes of death in newborns, infants and young children, in the necropsy protocols from two Departments of Pathology (Mureș County Hospital and Emergency County Hospital of Târgu Mureș, Romania), between 2016–2018. We performed descriptive statistics: number of necropsies per year, distribution by gender (male/female), by place of origin (rural/urban), by age and leading causes of death in our study. To establish the pattern of lung injuries, we performed a morphological, histopathological and immunohistochemical study [cluster of differentiation (CD) 3, CD14, CD20, CD31, CD34, CD68]. Our study is showing the most frequent and typical aspects of pulmonary pathologies in fetuses, newborns, infants and young children. In this way, we are highlighting the microscopic aspects of the immature lung, amniotic fluid and meconium aspiration, pulmonary distress syndrome in children, pneumonia, bronchopneumonia and vascular pulmonary disease developed in patients with congenital cardiac defects. Most deaths were recorded in the first 30 days or in the first year of life. Primary respiratory diseases were the leading causes of death in these patients. Secondary respiratory diseases were associated with the major causes of death in these patients as an aggravating or precipitating factor.

Keywords: lung injuries, newborns, infants, aspiration of amniotic fluid, pneumonia.

Introduction

Lower respiratory infections are an important cause of morbidity and mortality in children, especially in infants and young children [1–3]. The rate of infant mortality is defined by the ratio between the number of children who have deceased below the first year of age and the number of children born alive in the same year. It is reported to 1000 newborn living children. This rate can be expressed at five years as well and it is represented by the ratio between the number of deaths of children less than 5 years old and the number of newborn living children from the same time lapse [4, 5].

Among with the general natality and mortality, it is the most accurate indicator regarding the evolution of a country's population, but indirectly it also reflects the socioeconomic and cultural status of that population, the level of sanitary education and the value of the health system in that particular country [6, 7].

According to World Health Organization (WHO)

statistics, in 2017, more than 6.3 million children have died around the world. There were 5.4 million deaths in children under the age of 5, and 2.5 million deaths in newborns in the first month of living. The main causes of death were perinatal complications [8], pneumonia, birth asphyxia [9, 10], and malaria.

The EUROSTAT statistics shows that Romania occupies the last place in Europe regarding the children mortality, starting from 2006 until 2017 (the most recent report). In 2006, the mean in the European Union (EU) was held at 4.6/1000, while in Romania it reached 13.9/1000. In 2017, EU reached a mean of 3.6/1000 and Romania a mean of 6.7/1000.

The lowest mortality rates in children are encountered in: Cyprus 1.3/1000, Finland 2.0/1000, Slovenia 2.1/1000, Estonia and Norway with 2.3/1000, and Sweden with 2.4/1000. In comparison with 2006, in Romania we can see a reduction of this indicator at half of its value, which shows a significant improvement in child care, starting with the assistance given to the pregnant women, the

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BOOK OF ABSTRACTS

SLEEP-WAKE DISTURBANCES FOR PATIENTS WITH DEMENTIA

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Background: Alzheimer disease (AD) is the most common neurodegenerative brain disease that causes cognitive impairment in the elderly. Behavioral and psychological symptoms of dementia (BPSD), also known as neuropsychiatric symptoms, represent a heterogeneous group of non-cognitive symptoms and behaviors for AD patients. **Objective:** The primary endpoint of this study was the diagnosis of dementia, a certain phenomenon, that has increasingly grew at national and international level. Moreover, the early diagnosis of dementia and sleep diseases in conformity with depression and anxiety **Material and methods:** Sleep disorder is one closely-related psychiatric symptom of AD. We aimed to investigate the characteristics of sleep status and BPSD among AD patients in Targu Mures, assessing the relationship among sleep disorder, BPSD, and cognition. Using a descriptive-analytical study, it analyse the correlation between patients with dementia and sleep-wake disorders. We included 30 patients who were diagnosed with dementia and insomnia from a shelter for elderly persons from Targu Mures, through the evaluation of the theme through a quiz realised in April 2020 and measured these results against a similar study conducted in 2018. We used Pittsburgh sleep quality index (PSQI) and orth sleepiness scale were designed to assess the sleep status and daytime naps. Also, we use Microsoft Excel for data processing. **Results:** Significant mean differences presented in both PSQI scores and ESS scores ($P < .05$) Total PSQI score and PSQI components scores in AD patients were significant. Showed that disturbed sleep patterns with highest incidences were nighttime sleep disturbances (73.5%), habitual sleep efficiency (61.3%), subjective sleep quality (56.7%), and daytime dysfunction (53.4%). **Conclusions:** This study definitively answers the question regarding in the field have shown that AD patients are more likely to present sleep disorders and sleep. As known, sleep disorders can affect cognition of AD patients and they can increase apathy and in the worst cases, depression.

Keywords: Alzheimer, dementia, sleep-wake

THE COMPLETENESS AND ACCURACY OF ONLINE INFORMATION ABOUT APHASIA IN ROMANIAN, HUNGARIAN, ENGLISH AND SPANISH LANGUAGES

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Background: The internet has become the first source of information for patients and also one of the main sources for medical doctors. When exposed to incomplete or inaccurate health-related information, unaware users may be at risk by following useless or harmful treatment recommendations. **Objective:** The primary aim of the study was to assess the completeness and accuracy of the information about aphasia on the English, Spanish, Romanian, and Hungarian websites. Additionally, we investigated whether the webpages in English language provided higher quality content compared to webpages in the other three languages. **Material and methods:** This observational, cross-sectional study included 25 websites for each language. The completeness and accuracy of each website were rated by two independent evaluators using a common set of criteria and instructions, developed with the contribution of local and international experts. Mean quality scores were calculated and reported on a scale ranging from 0 to 10. The obtained scores were compared by using the Student's t-test or Mann-Whitney test. The significance threshold was set to 0.05. **Results:** The mean completeness score was 4.4 (SD 1.4) for English websites, 4.2 (SD 1.0) for Spanish websites, 3.9 (SD 1.3) for Romanian website, and 3.8 (SD 1.4) for Hungarian websites, with no statistically significant differences between English and the other languages. The mean accuracy score was 9.2 (SD 0.8) for English websites, 8.6 (SD 1.0) for Spanish websites, 8.2 (SD 1.1) for Romanian websites, and 6.6 (SD 1.2) for Hungarian websites. English websites had significantly higher accuracy scores than Spanish ($p=0.014$), Romanian ($p=0.0007$), and Hungarian ($p<0.0001$) websites. **Conclusions:** Overall, the level of completeness of aphasia-related websites was low while the level of accuracy was relatively higher. The study suggests that using English language websites as a source of information regarding aphasia may offer access to more accurate information.

Keywords: quality of health-related information, aphasia, completeness, accuracy

PAEDIATRIC MORTALITY. CAUSES, COMORBIDITIES AND GENERAL INFORMATION.

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Background: Mortality rates among children are not only key indicators for child well-being, but, also provides information about health system, social, and economic performances. Despite the progress over the past two decades, newborns, children, and young adolescents die every year, mostly of preventable or treatable causes, such as respiratory pathologies and infectious diseases. **Objective:** This study intends to identify the causes of child mortality and comorbidities by taking into consideration both their origin and social-economic background. **Material and methods:** We conducted a retrospective study in 106 paediatric deaths cases with age ranges between 0 to 18 years at the Pediatric Clinic I, Târgu Mureş during a period of five years, 2014 - 2018. The percentages were calculated by using the Microsoft Excel program. **Results:** The highest rate of death cases per year was 1.48% in 2015, and the lowest 0.78% in 2017. In 2014, 2016 and 2018 there were 1.22%, 1.29%, respectively 0.95%. The most common causes of death were pneumonia/ bronchopneumonia and sepsis/ septic shock, with an incidence of 25%. Concerning comorbidities congenital pathologies were especially high, the most common cases were cardiovascular malformations, in a proportion of 18.2%. Other commonly occurring congenital pathologies were malformations of the nervous-, osteoarticular- and muscular system. The ratio of rural: urban origin during the studied period was 62%: 38%; 47% of death cases had a precarious social and economic background, 80% of them had at least one hospitalization in their medical history. **Conclusions:** Despite the fact that there is a fluctuation regarding the incidence of paediatric death cases per year, we can observe a decreasing tendency. Respiratory and infectious pathology were the most common causes of death, and congenital cardiovascular malformations were the most common comorbidities. Most of these paediatric cases came from rural areas, many of them having poor social and economic background.

Keywords: child mortality, quality of health services, comorbidities

THE ROLE OF COMPUTED TOMOGRAPHY IMAGING IN THE INITIAL EVALUATION OF STROKE – PRELIMINARY STUDY

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Background: A stroke is an onset of neurological deficit due to decreased blood supply of the brain. For the diagnosis and management of patients with acute stroke, a CT scan is the simplest and most readily available technique. The goal of initial imaging evaluation is to exclude hemorrhage, differentiate between reversible and irreversible affected brain tissue and to recognize if the cause is a stenosis or occlusion of major arteries. **Objective:** Our study aims to highlight the importance of advance radiological studies such as CT in the diagnosis of stroke in patients with recent neurologic deficit. **Material and methods:** Our retrospective observational study consisted of CT investigations ran during February 2020 on 40 patients with neurological deficit. CT evaluations were performed using a 64-slice device to analyze the presence of hyperdensities indicating hemorrhage or signs of an ischemic lesion such as hypodensity, mass effect with narrowing of the fissures and sulci. Contrast was administered in patients with ischemic lesions in order to identify the location of the occlusion and perfusion protocol was applied to detect ischemic penumbra. **Results:** Patients were predominantly males with a mean age of 64. Throughout the study ischemic stroke was prevalent (72,5%). Regarding risk factors, ischemic stroke was significantly associated with dyslipidemia and high blood pressure. CT evaluation depicted that ischemic strokes were mostly located in MCA territory, while hemorrhage was at the level of the cerebral parenchyma. Additionally, we observed that motor deficits in ischemic stroke were significantly associated with the visualization of hypodensities. **Conclusions:** CT scans represent the initial study in stroke patient in order to rule out hemorrhage which is crucial in choosing treatment. In ischemic stroke it can also identify the potential areas of reversible and salvageable brain tissue. The ratio of ischemic stroke and lesion location in relation to demographics resembles the data presented in the literature.

Keywords: Stroke, CT, Brain Tissue



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BOOK of ABSTRACTS

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extract the total polyphenol content is between 102.82 and 228 mg GAE / g dry spruce bark, depending on the extraction method used. The extracts were active against aureus *Streptococcus mutans* and *Streptococcus pyogenes*. **Conclusions:** Thanks to these results, the extracts from the beech and spruce bark could be used in pharmaceutical preparations or as preservatives in the food industry.

Keywords: antibacterial, beech bark, spruce bark, polyphenols, polyphenols, extraction

PROINFLAMMATORY BIOMARKERS AS PREDICTORS IN RESPIRATORY INFECTIONS IN CHILDREN

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Background: Lower respiratory infections are an important cause of morbidity and mortality in children, especially in young children. The WHO guidelines of 2014 have proposed 5 recommendations for the treatment of respiratory infections in children.

Material and methods: The paper presents the working methodology for the analysis of proinflammatory biomarkers in children with lower respiratory tract infections. The proinflammatory biomarkers analyzed include: high sensitivity PCR (hsPCR), IL-1, IL-6, TNF- α . The paper also includes a morphological study on the macroscopic and microscopic appearance of pulmonary lesions from the perinatal period, post-natal period and in small children. **Results:** This paper is part of the doctoral thesis and presents the working methodology, the respiratory infection monitoring record and the recording of the clinical and paraclinical parameters in patients with respiratory infections. The study is approved by the Ethics Committee of County Emergency Medical Hospital Mureş and the Ethics Committee of University of Medicine, Pharmacy, Sciences and Technology of Tîrgu Mureş. Each patient will be enrolled after obtaining the informed consent of the parent or the legal guardian. Clinical and paraclinical evolution will be monitored for the type of treatment received. The morphological study analyzes the following pulmonary lesions from the histological and immunohistochemical perspective: pulmonary atelectasis, pulmonary dystelectasis, pneumonia and bronchopneumonia. **Conclusions:** The plasma level of proinflammatory markers will correlate with the type of therapy received and the evolution of the case. Tissue changes may occur early compared to the clinical and paraclinical parameters and provide a certainty of diagnosis.

Keywords: infection, children, proinflammatory, biomarkers, immunohistochemistry

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Keywords: gastric cancer, maspin, epithelial-mesenchymal transition

EXTRAMAMMARY PAGET'S DISEASE ASSOCIATED WITH SUBCUTANEOUS UROTHELIAL CARCINOMA METASTASIS: CASE REPORT

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Background: Extramammary Paget's disease (EMPD) is a rare slow-growing malignancy which occurs within the epidermis and originates in the pluripotent stem cells located in the interfollicular or in foliculo-apocrine-sebaceous units of the epidermis. Usually, primary EMPD is not associated with an underlying neoplasm, unlike mammary Paget's disease, whereas secondary EMPD is an expression of an underlying internal tumor. **Material and methods:** We present the case of a 54 years old female with a history of urothelial carcinoma and a right iliac fossa skin tumor, which was surgically removed. **Results:** On macroscopic evaluation an ulcerated-like superficial lesion was observed, underneath with a rounded, well-circumscribed white nodule. The microscopic examination revealed a dermal proliferation of sheets and nests composed of urothelial-like tumor cells, which were confirmed by immunohistochemistry, being strongly positive for CTK7 and p63. The superficial lesion in the epidermis was represented by a proliferation of atypical tumor cells with abundant pale to clear cytoplasm, large vesiculous nuclei and prominent nucleoli, which displayed a pagetoid extension through epidermis. The tumor cells expressed CTK7 and E-caderin and were negative for S100. **Conclusions:** EMPD is a rare lesion and determining its primary or secondary origin is of great importance for the treatment and prognosis of patients. Secondary EMPD represents a skin expression of an underlying internal malignancy, therefore it is essential to recognize the lesion and undergo thorough examination to rule out an associated malignancy.

Keywords: EMPD, skin, immunohistochemistry, pathology

GIANT CELLS – INFLAMMATION AND TUMORS

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Background: Multinucleated giant cells are morphologically characterized by a thick cell membrane having an irregular surface, dense, granular, eosinophilic cytoplasm, and large irregular nuclei with visible nucleolus. According to the patterns of the nuclear arrangement, the following types of giant cells are commonly seen: Langhans giant cells with horseshoe-shaped nuclei at one pole of the cell, foreign body giant cells with nuclei randomly scattered throughout their cytoplasm, and Touton giant cells with a central ring of nuclei. They are formed by fusion of macrophages and are common in chronic granulomatous inflammation, specific inflammation (tuberculosis, syphilis, leprosy and sarcoidosis), and non-specific inflammation (foreign body granuloma, pilonidal disease and gout), but they can also appear in the morphology of tumor lesions. **Material and methods:** It is analyzed a number of 139 cases between 2017-2018, cases belonging to the Pathology Department from Mures County Clinical Hospital, in which the presence of giant multinucleated cells was the key to histopathological diagnosis. Standard HE staining, special stains and immunohistochemical reactions were used. **Results:** It is evaluated the morphology of the giant cells, different aspects based on their etiology and the context of their appearance. Out of the 139 cases, 52% (n=72) were men and 48% (n=67) were women. 10% (n=14) of the cases were diagnosed with pilonidal disease, 14.3% (n=20) with epidermoid cysts, and 6% (n=8) were tumor cases. Among the tumor cases, both benign tumors (benign fibrous histiocytoma, giant cell tumor of the tendon sheath) and malignant tumors (malignant fibrous histiocytoma) were identified, whose immunohistochemical profile is CD68 positive. 11% (n=16) of the cases presented granulomatous inflammation. **Conclusions:** The presence of multinucleated giant cells is the clue to the histopathological diagnosis in various non-tumor and tumor lesions. The CD68 immunoassay positivity confirms the macrophage

AGGRESSIVE ANGIOMYXOMA OF VULVA: CASE REPORT

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Background: Aggressive vulvar angiomyxoma is a low grade mesenchymal tumor, which infiltrates into the vulval, perineal and pelvic regions of the deep soft tissues. It develops more frequently in women during the reproductive period. **Material and methods:** We present the case of a 54-year-old patient to which is performed a surgical excision for the presence of a relatively well defined nodule with a gelatinous appearance located in the left labia. **Results:** The microscopic examination reveals a tumor growth consisting of a paucicellular cell proliferation of oval and fusiform cells haphazardously arranged, focally in nests and trabeculae. The cells have monomorphic, elongated and oval shaped nuclei without mitosis. Stroma is a mixoid and contains a proliferation of vascular structures of different sizes with thickened walls. The tumor does not ulcerate the skin and has infiltrative edges. Immunohistochemically, tumor cells are strongly positive for vimentin, estrogen receptors and progesterone receptors respectively negative for SMA and desmin. CD 31 and CD 34 markers are positive at vascular structures. **Conclusions:** In the face of a potential diagnosis of aggressive vulvar angiomyxoma, it is important to determine whether the analyzed tumor is completely excised because this lesion has a tendency to frequent recurrence and infiltrate deep soft tissues and surrounding organs.

Keywords: aggressive angiomyxoma, vulva, immunohistochemistry

DIFFUSE LARGE B CELL LYMPHOMA OF GERMINAL CENTER TYPE INVOLVING THE GALLBLADDER - A CASE PRESENTATION

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Background: Lymphomas of the gallbladder are extremely rare tumors. **Material and methods:** a 56 year old female patient was admitted to the Mures County Hospital for chronic abdominal pain and a laterocervical lymphadenopathy. Cervical node biopsy and cholecystectomy was performed for acute cholecystitis. Macroscopic examination of the surgical specimen was performed at gross sampling. After tissue processing for histology, hematoxylin and eosin colored slides and immunohistochemical stains with lymphoid markers were examined. **Results:** On microscopic examination, the laterocervical lymph node and the wall of the gallbladder showed a diffuse infiltrate consisting of medium to large atypical cells with increased number of mitoses. The tumor cells were positive for CD20, CD10, BCL2, BCL6 and LCA, with a Ki-67 proliferative index of 98%; and were negative for CD3. **Conclusions:** primary lymphomas of the gallbladder are very rare, only about 40 cases being reported in the literature so a secondary nature of these tumors should always be taken in consideration. Complete clinical examination and immunohistochemistry is crucial for a correct final diagnosis and staging of the tumor.

Keywords: gallbladder lymphoma, B-cell lymphoma, metastasis