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Comprehensive Management of Child Maltreatment Syndrome: A Case Study and Clinical Implications in An Infant

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ABSTRACT

Introduction and purpose

The World Health Organization (WHO) defines violence against children as “all forms of physical and emotional maltreatment, sexual abuse, neglect and exploitation that result in actual or potential harm to a child's health, development or dignity.” In Poland, 17,392 cases of violence against children and adolescents were reported in 2015. In the U.S. in 2012, 3.4 million children were reported to facilities for maltreatment. Violence against children leads to serious health problems, both physical and mental, as well as long-term social consequences. Despite its prevalence, many cases remain unreported, with victims, particularly infants, being highly vulnerable.

In the case described, a boy born at 36 weeks gestation was admitted to the hospital with symptoms of apathy. Examination revealed neurological symptoms, multiple intracranial hematomas, skull bone fractures and hearing loss. The ophthalmic consultation and examination revealed the presence of retinal hemorrhages, confirming the diagnosis of child maltreatment syndrome. Prompt medical and legal intervention allowed the child's condition to be stabilized, allowing for proper further development in foster care.

This article presents a clinical case of maltreatment syndrome in an infant, with a discussion of complications and abnormalities in the performed investigations and a discussion of the treatment administered.

Conclusion

Prompt recognition of such cases is vital, considering the potential long-term physical and psychological consequences. Practical implications for medical personnel and the need to cooperate with social and legal institutions to provide adequate care for abused children are discussed. The presented case underscores the need for comprehensive approaches to address

child maltreatment, involving medical, legal, and social interventions to safeguard the welfare of affected children.

Key words: maltreatment syndrome, child abuse, child maltreatment, intracranial hemorrhage

INTRODUCTION

The World Health Organization (WHO) defines child maltreatment as “all forms of physical and emotional ill-treatment, sexual abuse, neglect, and exploitation that results in actual or potential harm to the child’s health, development or dignity.” The types of abuse include: neglect, physical abuse, psychological abuse, and sexual abuse [1,2].

In 2015, 17,392 cases of violence against children and adolescents were recorded in Poland, where minors were physically, mentally and sexually abused [15]. According to estimates from the Centers for Disease Control and Prevention, in the USA in 2012, 3.4 million children were referred to facilities due to maltreatment. The most common form is neglect - the reported cases accounted for as much as 78%, followed by physical abuse (18%) and sexual abuse (9%). However, these data do not fully reflect the actual situation, as many cases go unreported. Victims are mainly children up to 3 years of age (27% in 2012), with infants experiencing the most violence (21.9 per 1000 children). Despite fewer cases among older children, it is worth noticing that girls are more susceptible to experiencing violence compared to boys in all age groups [3].

Child abuse not only causes acute injuries, but also leads to many physical health problems, some of which may not be directly associated with abuse and neglect. For instance, the Adverse Childhood Experiences (ACE) study has repeatedly demonstrated a strong relationship between abuse exposure and/or household dysfunction during childhood and several of the top risk factors for the major causes of death in adulthood, which are cancers, chronic lung disease, skeletal fractures, liver disease or ischemic heart disease [4]. According to studies, there is also a significantly higher risk of mental health problems. In other words, violence against children can have long-term social consequences in the future [5].

The syndrome of maltreated infants is more difficult to identify than in older children due to their lack of developed communication skills. It is important to pay attention to characteristic neurological symptoms or their pathological absence. Maltreated infants may have difficulty in feeding, sometimes being excessively anxious during it, reject food, or overeat as a way to self-soothe. When assessing a child, attention should always be paid to whether there is a delay in their development (including speech) and whether caregivers seek treatment for them in a timely manner. Vigilance should be raised by injuries at various stages of healing that are inconsistent with caregivers' explanations, as well as when their reaction to questions asked is aggressive or indifferent. In cases of physical abuse, the most common symptoms are intracranial bleeding and other central nervous system injuries, diagnosed through imaging studies. Intracranial bleeding carries serious consequences depending on its location, size, and severity. Due to its anatomical location, one of the most common complications is damage to the auditory center. Fractures in the area of the long bone epiphyses are also frequently detected [6].

We present a clinical case of a patient who experienced maltreatment syndrome as a child, manifested in massive intracranial bleeding and accompanying numerous fractures in the skull bones.

CASE REPORT

The male infant born from the second pregnancy was delivered by a C-section at 36 weeks of gestation age, with an Apgar score of 7/8/8. During the adaptation period, he experienced respiratory distress syndrome, congenital pneumonia, a secundum atrial septal defect (ASD II) found on echocardiogram (ECHO). At 5 weeks of age, the boy presented with his mother to the Primary Health Care Clinic because of apathy and reluctance to eat, from where he was referred by ambulance to the Emergency Department at the University Children's Hospital in Lublin. After identifying signs of dehydration and low activity, he was transferred to the Infant Pathology Department. The boy's condition was assessed as moderate-severe, showing low spontaneous activity and respiratory distress. During the physical examination, pale-gray discoloration of the skin was noted, along with petechiae located around the left knee and in the posterior left axillary region, pale conjunctiva and oral mucosa, plagiocephaly, floating eyeballs and sluggish pupillary reactions to light. Neurological examination revealed apathy, weak responses to stimuli, poorly expressed

infantile reflexes, and positive meningeal signs. During the first hour of admission the respiratory disturbances intensified, clonic seizures occurred, increased muscle tone in the limbs, rigidity, exaggerated deep tendon reflexes; monitored blood oxygen saturation dropped below 70%, and bradycardia was observed. Laboratory test results were as follows: hemoglobin 6.2 g/dl, hematocrit 18.8%, erythrocytes 2.02 million/ μ l, leukocytes 15.38 thousand/ μ l, neutrophils 7.39 thousand/ μ l, CRP 2.19 mg/dl, D-dimers 15510 ng/ml. Results of other laboratory tests were within normal range. From the blood culture, *Staphylococcus hominis* MRCNS (methicillin-resistant coagulase-negative *Staphylococcus*) strain was isolated. In the computed tomography (CT) scan of the head, a hyperdense area of intracranial hemorrhage measuring approximately 5 x 2 cm was diagnosed, located in the left parietal region. Similar irregular intracranial areas were visible: on the same side of vaulting, measuring approximately 18 x 10 mm, and a slightly irregular area of hemorrhage measuring approximately 1 x 1 cm in the right parietal region. Signs of subdural hemorrhage along the cerebral falx were present, with the thickest hematoma measuring approximately 5-6 mm near the vault of the brain. A smaller subdural hematoma of approximately 3 mm thickness was detected near the sagittal and coronal sutures bilaterally. Moreover, wide branching fissures were documented in both parietal bones, with overlapping of bone fragments in the right parietal region and additionally, two bone fragments were observed within the parietal cap. The chest CT revealed parenchymal consolidations bilaterally in the posterior segments of the lower lung lobes, suggesting post-traumatic areas of contusion or inflammatory changes. No abnormalities were detected in the CT scan of the abdominal cavity. After three neurosurgical consultations during hospitalization, the features of intracranial cramping and indications for emergency neurosurgical intervention to decompress hematomas were not found.

The ophthalmic consultation and examination of the fundus of the eye revealed the presence of retinal hemorrhages, confirming the diagnosis of child maltreatment syndrome. Due to the anemia a supplementary red blood cells (RBC) transfusion was performed. The child was administered wide-spectrum antibiotic therapy and phenobarbital for seizures. Gradual improvement in the child's condition was observed, allowing for the discontinuation of antiepileptic medications. The patient at 14 weeks of age after 5-week hospitalization in University Children's Hospital, in good general condition, was given to the care of a professional foster family with a recommendation for periodic specialist follow-up. Follow-up imaging studies of the central nervous system were conducted, including magnetic resonance imaging (MRI) and ultrasonography (USG), which did not reveal signs of increased

intracranial bleeding. At the age of 6 months, the patient was admitted to the Infant Pathology Department for a follow-up MRI of the head. Clinically known areas of intracranial bleeding were visualized and previously described features of thrombosis in the transverse sinuses bilaterally and in the frontal veins on the right side were not visible. Intravenous hydration was administered, and follow-up was recommended at the neurological outpatient clinic with the MRI results.

At the age of 6 months, the boy presented with a foster caregiver for a follow-up MRI, where the following were visualized: clinically known areas of temporally distant intracerebral hemorrhage, chronic lesions with a possible component of minor subacute hemorrhage in the left parietal lobe and discrete ones in the right parietal-occipital region. However, the features of thrombosis in the transverse sinuses of the brain described in the previous study were not visible. Physical examination described an out-of-shape skull (plagiocephaly), quiet systolic murmur over the heart, normal alveolar murmur over the lungs, meningeal symptoms negative, eye contact adequate for age. The boy is developing properly, turning from abdomen to back and from back to abdomen, trying to crawl, babbling. The boy remains under the constant care of the rehabilitation, neurological, audiology and ophthalmology clinics.

Due to suspicion of serous otitis media (type B tympanogram), at the age of 2 years and 5 months, the boy was referred to the Department of Pediatric Otolaryngology, Phoniatrics, and Audiology for an Auditory Brainstem Response (ABR) test. The ABR test was postponed due to the restless child and the patient was referred for planned bilateral paracentesis with evaluation of the pharyngeal tonsil. The boy remains under the care of the Otolaryngological and Audiological Clinic as well as the General Physician.

DISCUSSION

According to the ICD-10 classification, the syndrome of maltreated child is placed under the symbol T74. Infants and young children are most vulnerable to the consequences of any violence towards them, due to the pre-maturity period and developmental susceptibility. Both psychological and physical injuries resulting from child maltreatment disrupt the process of physical and mental development [7]. Interestingly, studies in the literature indicate that especially in the USA the sensitivity of personnel to the issue of maltreated children varies among different ethnic groups - in the case of Black race, a significantly higher frequency of

screening for violence is observed compared to White children presenting with similar symptoms that may indicate physical abuse. On one hand, this may result in underdiagnosis of the problem among one group, while on the other hand, it clearly indicates biases towards the other group [7,8].

The American Academy of Pediatrics, in response to the challenges faced by clinicians in recognizing, assessing, and preventing maltreated child syndrome, has developed tools in many institutions to aid in making these decisions. The main goal was to reduce inadequate responses in doubtful cases, as well as to prevent improper diagnosis. Separate guidelines were created concerning the diagnosis and management of suspected physical abuse, isolated head injuries, and maltreatment of children with disabilities. The crucial role of collaboration among multiple specialists was also emphasized, along with the utilization of consultations with representatives of social and legal authorities responsible for child protection [9-12].

For clinicians, the issue of child maltreatment is not uncommon, which is why proper preparation of medical staff for diagnosis and appropriate legal procedures in cases of suspected violence is crucial. Article 304 paragraph 1 of the Polish Code of Criminal Procedure imposes a societal obligation on every citizen to notify the prosecutor's office or the police about a crime, including the fact of child abuse. Similarly, physicians are under the same legal obligation. The notification of suspicion of a crime against a child, signed by the head of the hospital department, is forwarded to the previously notified police. Therefore, along with the diagnosis of T74, notification of the appropriate authorities - police, juvenile court - is required. Furthermore, within each hospital, there should be a specialized social and legal unit dealing with such cases and contacting the appropriate social assistance authority [13-15].

In the case of the described patient, the most crucial aspect was the prompt notification of the relevant authorities about the suspicion of the problem. As a result of the correct interventions by the medical professionals and the accurate diagnosis, our patient who experienced physical abuse, upon discharge from the hospital, was placed under the care of a professional foster family acting as a family emergency service.

Children experiencing violence from parents may present at the hospital in various states and with various abnormalities. There is no single group of specialists that deal with abused children. Every physician must remain aware and careful when diagnosing patients, particularly in instances where recurrent symptoms of the ailment persist despite appropriate

treatment. Therefore, the therapeutic approach in these cases must be multidirectional, involving collaboration with specialists from multiple fields. In the described case, appropriate symptomatic treatment for anemia (transfusion of pRBC), antibiotics for detected infections, antiepileptic drugs, etc., were applied, alongside regular imaging examinations of the head to assess intracranial bleeding.

A child exposed to serious and numerous forms of violence and neglect in early childhood is likely more susceptible to health, emotional, and social consequences later in life [16]. Post-traumatic changes in abused children may be seen in all organs and systems. Rees P et al. has shown that the most frequent laryngeal abusive injury is pharyngeal perforations presenting with dysphagia, drooling, haemoptysis and surgical emphysema and injuries to the ear commonly impact the outer ear, leading to manifestations such as auricular deformities, abrasions, petechiae, lacerations, and burns [17,26]. Meanwhile, as in our patient's case, lesions can also affect the patency of the middle ear or exudative otitis media with subsequent sensorineural hearing loss.

Manifestations of violence frequently observed in children include injuries affecting the eyes. Eye injuries can arise from various mechanisms, including blunt trauma, penetrating trauma, and burns [18,28]. A meta-analysis conducted by Beets et al. revealed that subconjunctival hemorrhages were present in all children studied, suggesting that they may be identified as 'sentinel injuries' in children who later suffer severe physical maltreatment [18]. Head injuries can manifest themselves in the form of bone fractures, subdural hematomas, cerebral edema, intraventricular bleeding or epidural hematomas and rarely direct damage to brain tissue or in the worst cases can cause death [19].

The above conditions can cause damage to the central nervous system through induced hypoxia and ischemia of brain tissue, which in most cases is permanent with consequences such as delayed somatic, psychomotor and emotional development [35]. Numerous reviews have shown that children who have experienced violence in childhood are more likely to suffer from social anxiety and depression, post-traumatic stress disorder, psychosis, and even criminality in men, as well as experiencing violence and abuse from an intimate partner [20,30]. Exposure to both physical and emotional violence can have detrimental effects on children [21,25].

Disruption of the formation of the secure bond that children establish with their caregivers during childhood is crucial to their further psychological and psychosocial development. The distant consequences of child abuse are not only in the psychological

sphere, but can also manifest themselves in the form of somatic chronic diseases - children who have suffered multiple brain injuries in the neonatal and infant period, are more likely to suffer from epilepsy [22,29]. Recent reports even show a link between childhood abuse and the occurrence of asthma. Abajobir A. et al have observed an increase in the incidence of asthma by age 21 in those affected by childhood maltreatment syndrome in various forms, but the correlation of these aspects remains the subject of further study [23,24].

The abused child syndrome is a common area of interest for medics, psychologists, as well as lawyers and social activists [31]. This is evidenced by the number of studies treating the potential consequences of children's experience of violence [33,34]. The complexity of the problem lies in the multidisciplinary approach to diagnosis and treatment, as well as the appropriate diagnosis [27,32].

CONCLUSION

Maltreatment syndrome, encompassing various forms of abuse and neglect, poses significant risks to children's health, development, and well-being. Despite the relevance of the problem and the publicity of many cases, many cases remain unreported, which highlights the complexity of identifying and addressing child maltreatment. Prompt recognition and intervention are essential, given the potential long-term physical and psychological consequences. Collaboration among healthcare professionals, social services, and legal authorities is crucial in ensuring the welfare of maltreated children. Proper training of medical staff and adherence to legal protocols for reporting suspected cases are imperative. The presented case underscores the need for comprehensive approaches to address child maltreatment, emphasizing multidisciplinary interventions and ongoing monitoring to mitigate its adverse effects on children's health and well-being. Future research should emphasize that child abuse is occurring and will continue to occur, so that every patient experiencing violence receives appropriate care, treatment and, appropriate legal and social steps are taken.

Disclosure

Author's contribution

Conceptualization: Emilia Kowalczyk and Sylwia Koziej; methodology: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; software: Emilia Kowalczyk, Julia Bajorek; check: Sylwia Koziej, Joanna Borkowska and Julia Bajorek; formal analysis: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; investigation: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; resources: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; data curation: Joanna Borkowska and Julia Bajorek; writing - rough preparation: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; writing - review and editing: Emilia Kowalczyk, Sylwia Koziej, Joanna Borkowska and Julia Bajorek; visualization: Emilia Kowalczyk; supervision: Emilia Kowalczyk; project administration: Emilia Kowalczyk, Joanna Borkowska.

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REFERENCES

- [1] World Health Organization. (2015) Child maltreatment. [www document]. <https://www.who.int/news-room/fact-sheets/detail/child-maltreatment>
- [2] Dulce Gonzalez, Arian Bethencourt Mirabal, Janelle D. McCall. Child Abuse and Neglect. StatPearls Publishing; 2024 Jan
- [3] Dehling, Kim Laura. Child Abuse from the Clinical Forensic Aspect, Rijeka: Sveučilište u Rijeci, Medicinski fakultet, 2023. urn:nbn:hr:184:312690
- [4] Melissa T. Merrick, Natasha E. Latzman. Child Maltreatment: A Public Health Overview and Prevention Considerations. Online J Issues Nurs. 2014 Jan 31;19(1):2. PMID: 26812199
- [5] Xin Ying Ngiam, Ying Qi Kang, Ramkumar Aishworiya, Jennifer Kiing, Evelyn Chung Ning Law. Child maltreatment syndrome: demographics and developmental issues of inpatient cases. Singapore Med J. 2015 Nov; 56(11): 612–617. doi: 10.11622/smedj.2015169. PMID: 26668405. PMCID: PMC4656868
- [6] Marciński, A. (2005). Dziecko maltretowane - urazy nieprzypadkowe. Dziecko krzywdzone. Teoria, badania, praktyka, nr 11.
- [7] Tolliver DG, He Y, Kistin CJ. Child Maltreatment. Pediatr Clin North Am. 2023 Dec;70(6):1143-1152. doi: 10.1016/j.pcl.2023.06.013. Epub 2023 Aug 9. PMID: 37865436.

- [8] Zeanah CH, Humphreys KL. Child Abuse and Neglect. *J Am Acad Child Adolesc Psychiatry*. 2018 Sep;57(9):637-644. doi: 10.1016/j.jaac.2018.06.007. PMID: 30196867; PMCID: PMC6615750.
- [9] Diagnostic Imaging of Child Abuse, The American Academy of Pediatrics, Section on Radiology, *Pediatrics* (2009) 123 (5): 1430–1435. <https://doi.org/10.1542/peds.2009-0558>
<https://publications.aap.org/pediatrics/article/123/5/1430/71434/Diagnostic-Imaging-of-Child-Abuse?autologincheck=redirected>
- [10] IMPROVING CHILD PHYSICAL ABUSE DETECTION & REDUCING DISPARITIES WITHIN AND BETWEEN HOSPITAL SETTINGS, Children’s Hospital of Philadelphia, policylab.chop.edu
<https://policylab.chop.edu/sites/default/files/pdf/publications/PolicyLab-Evidence-to-Action-Brief-Improving-Child-Physical-Abuse-Detection.pdf>
- [11] Dettlaff, A. J., & Boyd, R. (2020). Racial Disproportionality and Disparities in the Child Welfare System: Why Do They Exist, and What Can Be Done to Address Them? *The ANNALS of the American Academy of Political and Social Science*, 692(1), 253-274. <https://doi.org/10.1177/0002716220980329>
- [12] Narang SK, Fingarson A, Lukefahr J; COUNCIL ON CHILD ABUSE AND NEGLECT. Abusive Head Trauma in Infants and Children. *Pediatrics*. 2020 Apr;145(4):e20200203. doi: 10.1542/peds.2020-0203. Epub 2020 Mar 23. PMID: 32205464.
- [13] Lewandowska A. Specjalistyczny Psychiatryczny Zespół Opieki Zdrowotnej im. J. Babińskiego w Łodzi, Wytyczne WHO dotyczące zapobiegania maltretowaniu dzieci i wzmacniania relacji rodzic–dziecko, *Pediatra po Dyplomie* 2023/03
<https://podyplomie.pl/pediatra/39129,wytyczne-who-dotyczace-zapobiegania-maltretowaniu-dzieci-i-wzmacniania-relacji-rodzicdziecko>
- [14] Wojaczyńska-Stanek K. Źródło: Puls Medycyny KLINIKA PEDIATRII I NEUROLOGII WIEKU ROZWOJOWEGO KATEDRY PEDIATRII ŚLĄSKIEJ AM, Lekarz ma obowiązek prawny zgłoszenia faktu maltretowania dziecka
<https://pulsmedycyny.pl/lekarz-ma-obowiazek-prawny-zgloszenia-faktu-maltretowania-dziecka-878286>
- [15] Medycyna Praktyczna Standardy w diagnozowaniu tzw. zespołu dziecka maltretowanego są konieczne 20.01.2017 IPCZD
<https://www.mp.pl/pediatra/aktualnosci/157393,standardy-w-diagnozowaniu-tzw-zespołu-dziecka-maltretowanego-sa-konieczne,1>

- [16] Avdibegović E, Brkić M. Child Neglect - Causes and Consequences. *Psychiatr Danub*. 2020 Oct;32(Suppl 3):337-342. PMID: 33030448.
- [17] Rees P, Al-Hussaini A, Maguire S. Child abuse and fabricated or induced illness in the ENT setting: a systematic review. *Clin Otolaryngol*. 2017 Aug;42(4):783-804. doi: 10.1111/coa.12668. Epub 2016 May 30. PMID: 27148702.
- [18] Betts T, Ahmed S, Maguire S, Watts P. Characteristics of non-vitreoretinal ocular injury in child maltreatment: a systematic review. *Eye (Lond)*. 2017 Aug;31(8):1146-1154. doi: 10.1038/eye.2017.25. Epub 2017 Mar 24. PMID: 28338664; PMCID: PMC5558215.
- [19] Ptaszyńska-Sarosiek I, Niemcunowicz-Janica A, Iłedo M, Filimoniuk M. Battered child syndrome in the records of the Department of Forensic Medicine, Medical University of Białystok *Arch Med Sadowej Kryminol* 2017; 67 (3): 153-165
DOI: <https://doi.org/10.5114/amsik.2017.73190>
<https://www.termedia.pl/Battered-child-syndrome-in-the-records-of-the-Department-of-Forensic-Medicine-Medical-University-of-Bialystok,82,31655,1,1.html>
- [20] Strathearn L, Giannotti M, Mills R, Kisely S, Najman J, Abajobir A. Long-term Cognitive, Psychological, and Health Outcomes Associated With Child Abuse and Neglect. *Pediatrics*. 2020 Oct;146(4):e20200438. doi: 10.1542/peds.2020-0438. Epub 2020 Sep 17. PMID: 32943535; PMCID: PMC7786831.
- [21] Liu J, Deng J, Zhang H, Tang X. The relationship between child maltreatment and social anxiety: A meta-analysis. *J Affect Disord*. 2023 May 15;329:157-167. doi: 10.1016/j.jad.2023.02.081. Epub 2023 Feb 24. PMID: 36841306.
- [22] Vegda H, Krishnan V, Variane G, Bagayi V, Ivain P, Pressler RM. Neonatal Seizures- Perspective in Low-and Middle-Income Countries. *Indian J Pediatr*. 2022 Mar;89(3):245-253. doi: 10.1007/s12098-021-04039-2. Epub 2022 Jan 20. PMID: 35050459; PMCID: PMC8857130.
- [23] Gaietto K, Celedón JC. Child maltreatment and asthma. *Pediatr Pulmonol*. 2022 Sep;57(9):1973-1981. doi: 10.1002/ppul.25982. Epub 2022 May 25. PMID: 35583017; PMCID: PMC9398985.
- [24] Abajobir AA, Kisely S, Williams G, Strathearn L, Suresh S, Najman JM. The association between substantiated childhood maltreatment, asthma and lung function: A prospective investigation. *J Psychosom Res*. 2017 Oct;101:58-65. doi: 10.1016/j.jpsychores.2017.08.003. Epub 2017 Aug 3. PMID: 28867425.

- [25] Jackson Y. Future Directions in Child Maltreatment Research. *J Clin Child Adolesc Psychol*. 2023 Jul 4;52(4):578-587. doi: 10.1080/15374416.2023.2224430. Epub 2023 Jun 29. PMID: 37383011.
- [26] Petska HW, Sheets LK. Sentinel injuries: subtle findings of physical abuse. *Pediatr Clin North Am*. 2014 Oct;61(5):923-35. doi: 10.1016/j.pcl.2014.06.007. Epub 2014 Jul 26. PMID: 25242706.
- [27] Morello L, Caputi M, Scaini S, Forresi B. Parenting Programs to Reduce Recurrence of Child Maltreatment in the Family Environment: A Systematic Review. *Int J Environ Res Public Health*. 2022 Oct 14;19(20):13283. doi: 10.3390/ijerph192013283. PMID: 36293863; PMCID: PMC9603684.
- [28] Morello L, Caputi M, Scaini S, Forresi B. Parenting Programs to Reduce Recurrence of Child Maltreatment in the Family Environment: A Systematic Review. *Int J Environ Res Public Health*. 2022 Oct 14;19(20):13283. doi: 10.3390/ijerph192013283. PMID: 36293863; PMCID: PMC9603684.
- [29] Beghi M, Zhang L, Beghi E, Giussani G, Erba G, Longinetti E, D'Onofrio BM, Bianchi E, Fang F, Tomson T, Chang Z. History of violence/maltreatment and psychogenic non-epileptic seizures. *Seizure*. 2020 Oct;81:8-12. doi: 10.1016/j.seizure.2020.07.012. Epub 2020 Jul 14. PMID: 32683268.
- [30] Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. *Lancet*. 2009 Jan 3;373(9657):68-81. doi: 10.1016/S0140-6736(08)61706-7. Epub 2008 Dec 4. PMID: 19056114.
- [31] McCarroll JE, Fisher JE, Cozza SJ, Robichaux RJ, Fullerton CS. Characteristics, Classification, and Prevention of Child Maltreatment Fatalities. *Mil Med*. 2017 Jan;182(1):e1551-e1557. doi: 10.7205/MILMED-D-16-00039. PMID: 28051972.
- [32] Norman RE, Byambaa M, De R, Butchart A, Scott J, Vos T. The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. *PLoS Med*. 2012;9(11):e1001349. doi:10.1371/journal.pmed.1001349
- [33] van der Put CE, Assink M, Gubbels J, Boekhout van Solinge NF. Identifying Effective Components of Child Maltreatment Interventions: A Meta-analysis. *Clin Child Fam Psychol Rev*. 2018;21(2):171-202. doi:10.1007/s10567-017-0250-5
- [34] Walsh K, Eggins E, Hine L, Mathews B, Kenny MC, Howard S, Ayling N, Dallaston E, Pink E, Vagenas D. Child protection training for professionals to improve reporting of child

abuse and neglect. Cochrane Database Syst Rev. 2022 Jul 5;7(7):CD011775. doi: 10.1002/14651858.CD011775.pub2. PMID: 35788913; PMCID: PMC9301923.

[35] Nemeroff CB. Paradise Lost: The Neurobiological and Clinical Consequences of Child Abuse and Neglect. Neuron. 2016 Mar 2;89(5):892-909. doi: 10.1016/j.neuron.2016.01.019. PMID: 26938439.