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Unexpected Baby Death - SIDS or Not?**Sinisa Franjic**

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A two-month-old baby girl died on April 4, 2021, at the Children's Home in Osijek, Croatia. The child was temporarily taken away of her parents because she was born prematurely, she was diagnosed with a risky health condition and it was assessed that the parents were unable to meet the child's needs. Parents are beneficiaries of social welfare. The mother suffers from diabetes and epilepsy. An autopsy determined that the child had died of pneumonia. The parents last visited the child the day before her death and she was cheerful, happy and in a good mood, but she was coughing, which they warned the authorities at the Children's Home in Osijek. Because of the tragic outcome, the parents publicly expressed doubt in the official version of this sad event which did not have to end in death. This paper describes what a criminal procedure should do in this and similar cases.

Keywords: Child; Death; SIDS; Criminal Investigation**Cite this article as:** Sinisa Franjic. 2021. Unexpected Baby Death. Int J Forensic Sci. 3: 17-21.**Copyright:** This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. Copyright © 2021; Sinisa Franjic**Introduction**

Sudden death in infancy and childhood has many natural, inflicted, and noninflicted causes [1]. Determining the incidence of sudden childhood death is not necessarily an easy task as rates vary among populations and within communities over time. Death certificate and autopsy diagnoses may not always be correct, as there is often regional bias in preferred diagnoses, and investigations may not always be comprehensive or follow standard protocols. Rates for sudden natural death have varied between 1.1 and 13.8 cases per 100000 of the pediatric population, accounting for 2-5% of deaths in the age range of 1-20 years. The most common causes of sudden natural death also vary according to age.

SIDS

Sudden infant death syndrome (SIDS) is defined as "the sudden death of an infant or young child, unexpected by history, in which a thorough postmortem examination and death scene investigation fail to demonstrate an adequate cause for death" [2]. SIDS is the leading cause of death among infants one month to one year old. The peak incidence is at 2-4 months, although there have been autopsy-proven occurrences up to 12 months of age. The incidence is higher in males, premature infants, and if the mother is a smoker, drug addict, or of lower socioeconomic status. Most cases occur between midnight and 9 a.m. during the cold-weather months. Typically, a previously healthy baby either does not awaken for a morning feed or is found cold and lifeless in the crib.

On occasion, the infant is found pale or cyanotic, apneic, or limp, and resuscitation is initiated at home or enroute to the ED (Emergency Department). It is not clear if these episodes are part of the SIDS spectrum. SIDS is a diagnosis of exclusion and cannot be confirmed until an autopsy and other postmortem studies have ruled out other possible causes of sudden death in infancy, including adrenal insufficiency, overwhelming pneumonitis, bacterial sepsis (especially in sickle cell disease), child abuse, and poisoning. Near-miss episodes and BRUE (Brief Resolved Unexplained Events) may also result from prolonged sleep apnea, gastroesophageal reflux-induced apnea, cardiac dysrhythmias, metabolic disorders, and seizures. The infant is by definition healthy or almost healthy and the death remains a mystery even after a careful autopsy and histological and toxicological examination [3]. The syndrome touches on heterogeneous diseases, each of which are capable of causing sudden death. Since the greater part of the infants die in their sleep, the syndrome is also known as crib death. It has an occurrence of 1.5-2 per thousand live births among newborns.

SIDS is more likely in infants in whom the following prior conditions exist:

- retarded intrauterine development, small birth weight,
- manifest developmental retardation following birth,
- being the second or later birth,
- the mother smokes,
- the infant is restless, tachypnea, tachycardia, prone to vomiting.

SUID

Sudden unexplained infant death (SUID) is the sudden and unexpected death of an infant due to natural or unnatural causes [4]. SUID applies to the death of an infant less than 1 year of age, in which investigation, autopsy, medical history review, and appropriate laboratory testing fails to identify a specific cause of death.

Sleep

Typically, a seemingly healthy infant is found dead in the early morning after a sleep period [5]. Not uncommonly today, an infant can be found dead in a daycare setting, following a morning or afternoon nap. The association of SIDS with a sleep period strongly suggests that SIDS occurs during sleep, or during one of the many transitions from sleep to waking (arousal) that an infant experiences during the course of a night. In a subset of SIDS cases, there is a history of recent upper respiratory tract infection, gastroenteritis, and/or fever (infection). In the large NICHD epidemiologic study of risk factors for SIDS, 1.5% of SIDS cases (compared with 0.2% of controls) had an episode of apnea or cyanosis noted in their medical records. Currently, there are no methods to diagnose “SIDS” in a living infant. In infants who subsequently die of SIDS, or who are considered at high risk for SIDS (i.e., infants with acute lifethreatening events or premature infants), subtle abnormalities in respiratory control, autonomic function, and/or arousal have been reported. These abnormalities include frequent or prolonged apnea, decreased sensitivity to hypoxia or hypercarbia during sleep, impaired control of heart rate or respiratory rate, episodic tachycardia, state-dependent reduction in heart rate variability, abnormal vagal tone, episodic obstructive apnea, increased sweating, and deficient or absent arousal responses from sleep, less waking and more sleep during the early morning hours, and defective gasping (autoresuscitation). These abnormalities are not clinically obvious in the majority of individual cases, and have yet to lead to a physiological panel of biomarkers for screening for risk in large neonatal populations.

Death Scene

It has to be decided at a very early phase, after the death has been brought to the attention of the police, whether it is thought that the death under investigation is suspicious or not [6]. It is always the counsel of perfection to be safe rather than sorry, and to upgrade - at least

initially - the investigation of a scene to suspicious status when one is unsure. This decision may require an early input from a forensically trained medical practitioner, though not necessarily a pathologist, and the viewing and careful inspection of the body. In situations that speak for themselves, in particular when evidence of violence is present, this, of course, can be dispensed with.

The fact that the body of the child may already have been taken to hospital for attempted resuscitation does not dispense with the scene examination, and a close retrospective inspection of the scene where the death has occurred is called for at the earliest possible opportunity. Once the attention of the police has been drawn to the occurrence of a suspicious, violent or unexpected death, every effort should be made to return to the scene where the death took place. In these circumstances, it is essential that hospital staff and emergency personnel are interviewed soon after the event to obtain from them information regarding: the findings on the child when brought into hospital, dead or moribund; the results of any emergency biochemical, haematological and radiological investigations carried out; and the various aspects of the resuscitative process that have taken place, including drugs administered to the child. It is also useful to obtain access at an early stage to - and indeed to secure seizure of, against appropriate receipting any samples collected from the now-deceased child prior to any medication or intravenous infusions having been administered. These so-called 'pre-transfusion specimens' may prove extremely useful for further analysis.

Pediatric Forensic Pathology

Although physicians have recognized common childhood illnesses since the beginning of recorded history, pediatrics as a specialty separate from internal medicine and obstetrics and gynecology is a fairly recent development [7]. While pediatricians have treated the natural diseases of children since the 1850s, the role of physicians in recognizing, treating, and preventing violent injuries and deaths in infants

and children (and distinguishing those from natural disease) is much more recent. The history of pediatric forensic pathology is a story of recognizing what has been right before our eyes, energetically compensating for long periods of neglect, and then contritely correcting for overcompensation. The tendency for vigorous response is understandable. There are few things that ignite passions more than matters that involve the welfare of children. Pediatric forensic pathology deals with suspected violent child deaths. The written opinions issued by pathologists and their expert testimony in court are often crucial factors in court decisions about the custody of surviving children and the liberty of accused parents. Pediatric forensic pathology is the name for the unofficial and poorly defined subspecialty of forensic pathology that focuses on the evaluation of sudden, unexpected, unexplained or traumatic deaths in children, infants, neonates, and even fetuses [8]. By definition, therefore, this discipline requires specialized knowledge of and familiarity with the various stages in growth and development that occur during childhood, infancy, and intrauterine life, along with the differential vulnerabilities of these periods to various insults, and finally, the unique patterns of injury that characterize these different periods. Perhaps one of the most illustrative examples of this concept is the assessment of nonaccidental or inflicted head trauma in infants and very young children. An understanding of this type of injury would not be possible without being thoroughly acquainted with the following concepts: (1) the elasticity of the infant's scalp, such that it could potentially sustain a serious blunt impact without necessarily manifesting the impact in the form of a subgaleal contusion; (2) the thin, pliable, unilaminar quality that renders the skull less susceptible to fracture but also allows it to transmit forces to the underlying brain more readily; (3) the broad, shallow skull base in infants, which facilitates rotational movement of the brain and lowers the threshold for diffuse axonal injury; (4) the incompletely myelinated infant brain, with a gray- and white-matter water content substantially higher than that of an adult, imparting a consistency of unset

gelatin and making the brain more vulnerable to shearing forces; and (5) the top-heavy calvarium and the weak, underdeveloped neck muscles that fail to effectively dampen the oscillations that are initiated when rotational movement of the brain begins. It is the interface of pediatric and forensic pathology that allows the most complete and comprehensive understanding of these concepts to occur; however, very few individuals actually have such expertise in both fields. As a result, forensic pathologists may have to rely on pediatric pathologists and neuropathologists when they are evaluating difficult, complex, or problematic cases involving deaths in the pediatric population.

Death Investigation

Having knowledge about the many causes of SUID, in addition to SIDS, is of utmost importance for the death scene investigator [4]. At the scene, the investigator will gather evidence as well as information from the parents or caregivers who were with the infant and who may be in a great deal of distress. All of this information is crucial for distinguishing between a natural death, an accidental death, or a homicide.

Autopsy

While unable to account for death, macroscopic findings at autopsy include [9]:

- Distribution of livor mortis consistent with a prone position
- Cyanosis of the lips and fingers
- Partial hemorrhagic pulmonary edema
- Foamy contents in the upper respiratory tract and at respiratory openings
- Frequently, abundant subserous petechiae, particularly beneath the thymic capsule, as well as within the thymic tissue, in the subpleural and subpericardial regions
- Occasionally, uni- or bilateral mucopurulent otitis media
- No internal organ abnormalities

- No indication of external gross blunt force trauma immediately prior to death

The management of the SIDS victim requires a detailed history of the circumstances surrounding the infant's death [2]. An autopsy must be performed by the medical examiner. If the resuscitation of a near-miss victim is successful, admit the infant to an ICU (intensive care unit) for continuous cardiopulmonary monitoring and further evaluation. Obtain an ECG with rhythm strip, chest x-ray, and blood for a CBC (complete blood count) with differential, electrolytes, glucose, and culture. Perform a lumbar puncture for cytology, chemistries, a viral encephalitis panel, and culture, and obtain a urinalysis and urine culture.

Criminal Investigation

Criminal investigation is a reconstructive process that uses deductive reasoning, a logical process in which a conclusion follows from specific facts [10]. Based on specific pieces of evidence, investigators establish proof that a suspect is guilty of an offense. For example, finding the suspect's watch at the scene of a burglary is one piece of evidence that supports the premise that the suspect was at the scene. An issue that might arise is whether the watch could have been planted there. Investigators need to anticipate what issues might arise and what evidence is needed to support the prosecutor's case. All issues in dispute must be supported by evidence. The more evidence an investigation yields, the stronger the proof of guilt. Equally important, however, is evidence establishing innocence. The purpose of the crime scene search is to discover evidence that will be useful in determining what happened, with the ultimate goal of identifying the person or persons responsible for committing the crime, and thus resolving the case [11]. Evidence discovered at the crime scene will play a crucial role later at the criminal trial in establishing the truth and convicting the guilty parties. The general scope of the crime scene can cover structures of any kind, including but not limited to vehicles, open fields, mass transit

systems, water vessels, waterways, aircraft, and the like. In some cases, there may be multiple crime scenes for one crime.

Criminal Law

Criminal law realizes the protection of life and body by direct and indirect protection [12]. The acts of criminal acts against life and bodies are predominantly active acts of perpetration and conceptually constitute an important group of acts of violence. Violence implies destructive aggression, extreme form of aggression, or the illicit application of physical (physical) or psychological coercion. From the criminalistic point of view, the torts of violence nowadays follows the characteristics: which make it difficult for them to suppress, for example: (1) an increasing number of attacked persons seeking medical attention but concealing the origin of the injury; (2) simultaneously unannounced acts of violence increase the "dark number" of this torts; (3) a large number of incidents in various facilities and public places that have the characteristics of these torts remain unregistered; (4) there is an increasing number of torts of torts in the family especially for women and children; (5) attacks on policemen and other official persons; (6) because of various reasons does not report the torts of violence etc.

Conclusion

Due to a number of unexplained facts in this case, it is necessary to conduct a thorough criminal investigation. It should determine why the baby died and the possible existence of responsibilities of officials. If the existence of responsibility is confirmed, officials would have to criminally liable.

References

1. Byard RW, Krous HF. 2005. Sudden Natural Infant and Childhood Death in Encyclopedia of Forensic and Legal Medicine. Elsevier, London, UK. 382.
2. Miller S, Sonnier L. 2018. Psychological and Social Emergencies in Clinical Manual of Emergency Pediatrics, Sixth Edition", Cambridge University Press, Cambridge, UK. 620-621.
3. Buris L. 1993. Forensic Medicine. Springer-Verlag, Budapest, Hungary. 214.
4. Demirci S, Dogan HK. 2011. Death Scene Investigation from the Viewpoint of Forensic Medicine Expert. Forensic Medicine - From Old Problems to New Challenges. InTech, Rijeka, Croatia. 45-48.
5. Kinney HC, Hefti MM, Goldstein RD, et al. 2018. Sudden Infant Death Syndrom in Adle-Biassette. Neuropathology, Second Edition. John Wiley & Sons Ltd, Hoboken, USA. 270.
6. Busuttill A. 2008. The death scene following the sudden death of a child. Paediatric Forensic Medicine & Pathology", CRC Press, Taylor & Francis Group, Boca Raton, USA. 137-138.
7. Sanchez H. 2014. A History of Pediatric Forensic Pathology. Forensic Pathology of Infancy and Childhood. Springer Science+Business Media, New York, USA. 2.
8. Caplan MJ, Catanese CA. 2010. Pediatric Forensic Pathology. Color Atlas of Forensic Medicine and Pathology. CRC Press, Taylor & Francis Group, Boca Raton. USA. 147.
9. Dettmeyer RB, Verhoff MA, Schütz HF. 2014. Forensic Medicine - Fundamentals and Perspectives. Springer-Verlag, Berlin, Germany. 434-435.
10. Hess KM, Orthmann CH. 2010. Criminal Investigation, Ninth Edition. Delmar, Cengage Learning, Clifton Park, USA. 6-8.
11. Birzer ML. 2012. Crime Scene Search. Introduction to Criminal Investigation. CRC Press, Taylor & Francis Group, Boca Raton. USA. 36.
12. Pavisic B, Modly D, Veic P. 2012. Kriminalistika - Knjiga 2 (Criminalistics - Book 2). Dusevic and Krsovnik d.o.o., Rijeka, Croatia. 26.