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Sommario/riassunto

Sudden Infant Death Syndrome (SIDS) is the leading cause of death among infants in the first year of age. The more known definition of SIDS is the sudden unexpected death of an infant less than 1 year of age, with onset of the fatal episode apparently occurring during sleep, that remains unexplained after a thorough investigation, including performance of a complete autopsy and review of the circumstances of death and the clinical history. Despite the success of the "Back to Sleep" campaigns to reduce the risks introduced worldwide, the frequency of SIDS (striking one infant every 750-1,000 live births) has not significantly declined in the last years. Sudden Intrauterine Unexplained Death Syndrome (SIUDS), referring to fetuses that die unexpectedly, particularly in the last weeks of gestation, without any cause even after a complete autopsy, including examination of the placental disk, umbilical cord and fetal membranes, has a six-eightfold greater incidence than that of SIDS. Even if the pathogenetic mechanism of these deaths has not yet been determined, the neuropathology seems to be a consistent substrate in both SIUDS and SIDS. Subtle common developmental abnormalities of brainstem nuclei checking the vital functions have been highlighted, frequently related to environmental risk factors, such as cigarette smoke, air and water pollution, pesticides, food contamination, etc. Exogenous toxic factors can in fact interact in complex ways with the genetic constitution of the infant leading to polymorphisms and/or mutations of specific genes (as

polymorphisms of the serotonin transporter gene 5-HTT, the regulator of the synaptic serotonin concentration, and of the PHOX2B, the key gene in the Congenital Central Hypoventilation Syndrome). These interactions can directly injure the development of the autonomic nervous system, frequently resulting in hypoplasia of the vital brainstem centers, and consequently in sudden death. It is very important to continue studying these syndromes and in particular identify all possible congenital alterations and their correlation with the exposure to environmental risk factors, in order to reduce their incidence and mitigate the surrounding social concern. The goal of this research topic is to propose new approaches to explain the pathogenesis of both SIUDS and SIDS and consequently new prevention strategies to decrease the incidence of these unexpected and very devastating events for families. Expert authors in the Topic field are encouraged to submit original research articles aimed to widen the current knowledge on the pathological substrates of these deaths, also considering the correlations with possible risk factors. Submissions of hypotheses, opinions and commentaries are also welcome. This Research Topic would lead to development of targeted risk-lowering strategies to reduce the incidence of both SIUDS and SIDS. Furthermore, the adoption of appropriate preventive measures could also lead to improve the quality of life in adults, promoting active and healthy aging.