

SUDDEN UNEXPECTED DEATH OF A TERM FETUS WITH MATERNAL INFANT ANTI-CARDIOLIPIN ANTIBODIES. A CASE REPORT

Authors: *Lino Rossi, MD, Luigi Matturri, MD, Giulia Ottaviani, MD,
Institute of Pathology, University of Milan, Italy.*

A high frequency of hypoplasia of the arcuate nucleus occurs in fetuses who have died "sine causa" in a similar manner to that observed in sudden infant death syndrome (SIDS). Stillbirth is defined as late fetal death before the complete expulsion of the fetus from the mother. A term male fetus died in utero at the 40th week of gestation suddenly and unexpectedly. The mother had a regular pregnancy unremarkable except for an Anti-cardiolipin antibodies positivity. There was no significant family history relevant to the case. Post mortem examination was requested with clinical diagnosis of atrio-ventricular block due to Anti-cardiolipin antibodies. An EKG recording did not show a QT interval prolongation. A complete autopsy was performed, according to the autopsy protocol usually followed at our Institute in cases of sudden death, including particularly the observation of the cardiac conduction system, and of the central and peripheral autonomic nervous structures involved in the cardio-respiratory reflexogenesis. From the technical view point, the cardiac conduction system was removed in two blocks: the first included the sino-atrial node and the crista terminalis, the second contained the atrio-ventricular (AV) node, His bundle, bifurcation, and bundle branches. These two blocks were cut serially at intervals of 40-mm (levels) and stained alternately with hematoxylin-eosin and trichromic Heidenhain (azan). Transversal serial 5-mm sections were made through the entire pons and medulla oblongata and were stained using alternately hematoxylin-eosin, Bielschowsky, and Klüver-Barrera stains. The pertinent nuclei were outlined, namely the ARCn, the parabrachial/Kölliker-Fuse complex in the pons, the nucleus hypoglossus, the dorsal vagus motor nucleus, the tractus solitarius nucleus, the nucleus ambiguus, the trigeminal tractus and nucleus, and the ventrolateral reticular formation in the medulla oblongata. Plates in the atlas of Olszewski and Baxter (from n. 1 to n. 33). A morphometric analysis was performed with an Image-Pro Plus Image analyzer (Media Cybernetics, Silver Spring, MD) on both side of the brainstem. The volume of the ARCn was measured by 3-dimensional reconstruction. At autopsy, the fetus was described as a well-developed, well-nourished white male term fetus, with body length and weight at the 50th percentile. The external and internal examinations were entirely normal for gestational age and sex. The histological examination of the cardiac conduction system showed islands of conduction tissue in the central fibrous body, known as persistent fetal dispersion and areas of resorptive degeneration of the AV node. The brainstem examination revealed a severe bilateral hypoplasia of the arcuate nucleus. This morphological finding has been described in about 30% of our stillborn as well as SIDS cases, independently from the presence of anti-cardiolipin antibodies. Recently, some authors have given emphasis to the possible lethal association of maternal auto-antibodies and QT-prolongation, but they did not perform any post mortem exams and did not analyze the brainstem, considered instead of great importance by the present authors. Our findings underline the need of an accurate post mortem examination including the study of brainstem and cardiac conduction system in every case of unexpected late fetal death, following a standardized autopsy protocol similar to the one adopted in SIDS cases.