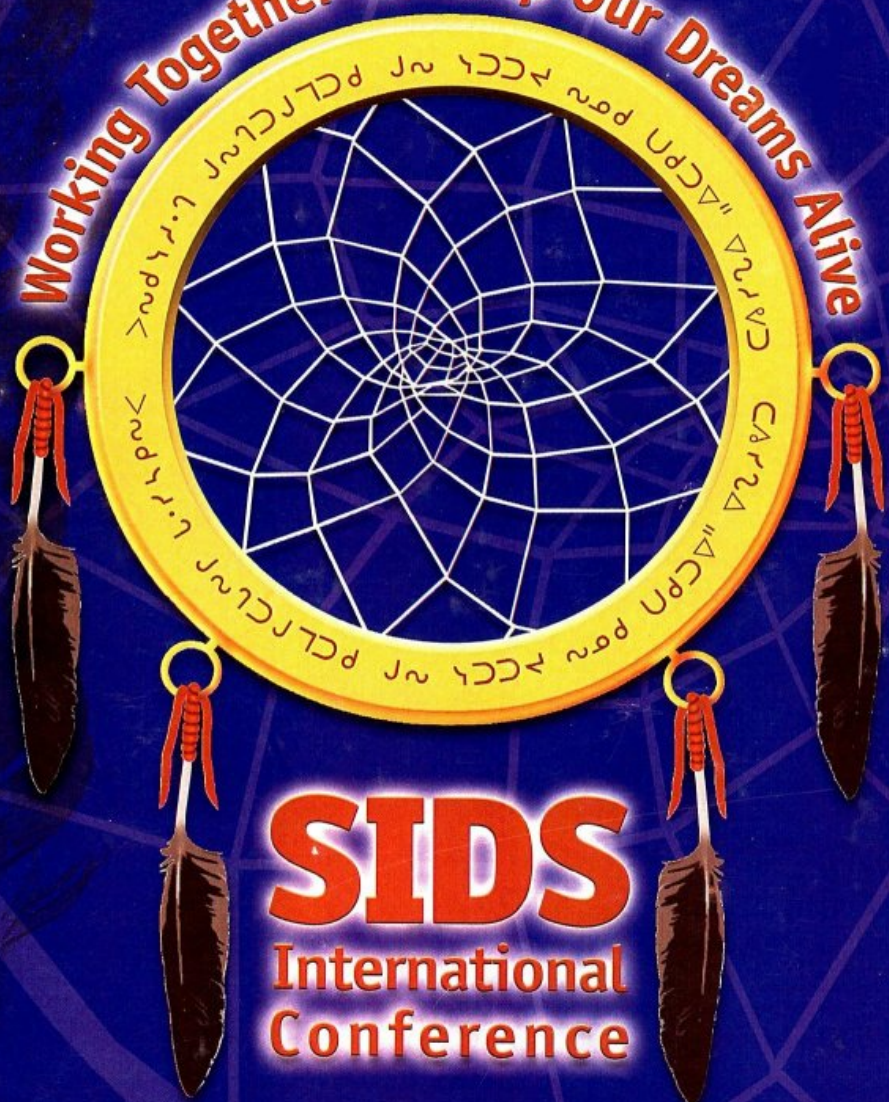




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031 Sampling Techniques of the Brainstem in Sudden Infant Death Syndrome (SIDS) and Sudden Unexpected Perinatal Death

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Recent observations have identified, both in SIDS and sudden unexpected perinatal death victims, frequent developmental abnormalities in the brainstem, particularly in the arcuate nucleus, an important cardio-respiratory center of the ventral medullary surface. The aim of the present work is to describe the anatomic-pathological techniques that can be adopted for the study of the respiratory cardio-vascular and arousal coordinating structures of the brainstem. A simplified procedure for the routine study of brainstem structures, starting in fetuses after the 25th week, newborns and in infants will be presented, applicable in all histopathological laboratories. However, it requires a careful and precise sampling. The sampling procedure consists of the examination of the 3 portions of the medulla oblongata, in order to observe the inherent nuclei (arcuate, olivary, hypoglossus, ambiguus, dorsal vagal, tractus solitarius nuclei, etc.) in their cranial, intermediate and caudal portions, and of the pontine-mesencephalic portion from the cranial portion of the pons to the caudal portion of the midbrain, in order to examine the parabrachial complex/Kölliker Fuse nucleus. This method is applicable in every laboratory. The medulla oblongata is divided into three blocks. The first cranial one is extended by the border between medulla oblongata and pons up to the upper pole of the olivary nucleus. The second, intermediary one, correspondent to the sub-median area of the inferior olivary nucleus, has as point of reference the obex and it is extended 2-3 mm above and under the obex itself. The third, caudal one, includes the lower pole of the inferior olivary nucleus and the lower adjacent area of the medulla oblongata. The first and the second blocks, including respectively the upper third of the medulla oblongata with the adjacent portions of the pons and of the medulla oblongata adjacent to the obex, are sectioned in a cranial-caudal direction. The third block, correspondent to the lower portion of the medulla oblongata, is sectioned instead in a caudal-cranial direction. The fourth sample from the pons and midbrain is sectioned in caudo-rostral direction. From each of these paraffin-embedded blocks, 6 groups of 12 serial sections are obtained. Thus, comparing with the complete method, this simplified one allows a remarkable reduction in the number of the histologic slides to perform. The four blocks are kept and sectioned as deemed necessary. With this simplified procedure it is possible not only to recognize the different nuclei, and particularly the arcuate nucleus in its variable extension, but also to compare them at correspondent levels.