



G111 Usefulness of Systematic Histological Examination in Routine Forensic Autopsy

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After attending this presentation, attendees will be aware of the considerable discrepancy rate between macroscopic and microscopic findings provided by standard histology in forensic autopsy.

This presentation will impact the forensic community by showing that histology is an important feature regarding forensic autopsy quality and is still essential to confirm, refine, or refute macroscopic findings.

Material and Methods: A prospective study was carried out on 1,786 autopsies performed in the department of pathology and forensic medicine at the Raymond Poincaré hospital from 2003 to 2007, for which standard histological examination was systematic according to autopsy protocol (including microscopic sections of the heart, lungs, liver, kidneys, pancreas, spleen, thyroid, adrenal glands, prostate and neuropathological study after brain formalin fixation). Histological sections were stained with haematoxylin and eosin. From all these autopsy cases were randomly selected 428 cases for which microscopic sections were reviewed by two forensic pathologists. SIDS cases and skeleton cases were excluded from the study. For each case, information provided by histology regarding respectively cause and manner of death, death mechanism, prior medical condition of the deceased, and documentation of eventual traumatic lesions were analyzed. Discrepancies between gross anatomic and microscopic findings were also studied.

Results: The mean age of the population was 46.2 years (range 5-91 years). The sex ratio (H/F) was equal to 2.46. Bodies showed respectively putrefaction in 92 cases, mummification in one case and diffuse carbonization in 15 cases. Concerning manner of death, the majority of the cases were natural deaths (n=130, including 63 cases of sudden death), followed by suicide (n=113), accident (n=104). Homicide and undetermined manner of death were respectively found in 40 and 41 cases. The most frequent causes of death were blunt force injuries (n=73), cardio-vascular diseases (n=90), mechanical asphyxia including drowning (n=62), acute intoxication (n=59) and gunshot wounds (n=47). No cause of death was found in 32 cases. Mechanism of death not shown by gross anatomic findings was discovered by histology in about 40% of the cases (n=173). The main mechanisms of death found were respectively cardiac arrhythmogenic substrate (n=98), acute myocardial ischaemia (n=17), pulmonary infection (n=17), vital alimentary aspiration (n=14), fat embolism (n=13), pulmonary thrombo embolism (n=5), diffuse axonal injury (n=3), disseminated intra-vascular coagulation (n=2) and sickle cell crisis (n=2). Cause of death was established only by histology in 8.4 % of the cases (n=36). In the 32 cases for which no cause of death was found, histology showed possible mechanism of death in 11 cases corresponding to a cardiac arrhythmogenic substrate. Microscopic findings affected the manner of death in 13% of the cases (n=56). Histology provided complementary information about prior medical condition of the deceased in about 49% of the cases (n=211). Traumatic lesions were better documented by histology in about 22% of the cases (n=94). The majority of discrepancies between microscopic and gross autopsy findings involved the liver, the heart, and the lungs. According to these results, microscopic findings are relevant if adequate sampling for histology is performed during autopsy. In most of the studied cases, histology can be considered contributory regarding respectively mechanism, cause and manner of death, prior medical condition of the deceased and traumatic lesions documentation.

Conclusions: According to the results of this study, systematic standard histology for the main organs should be used in routine forensic autopsies.

Forensic Autopsy, Histology, Cause of Death