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Immunohistochemical Investigation of Drug Related Renal Cell Changes

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Abstract

Background and Aim: A pathological evaluation of drug-induced renal impairment was investigated.

Materials and Methods: Kidney samples were collected from 44 forensic autopsy cases without any renal disease, and within 48 hours of postmortem interval (PMI). Cases with drugs detected from blood were treated as drug-related deaths, and cases without any drugs detected were classified as non-drug deaths. Immunohistochemically, antibody staining against vimentin, nestin, fibronectin, neutrophil gelatinase-associated lipocalin (NGAL), heme oxyganase-1 (HO-1), myoglobin, CD68, alpha-smooth muscle actin (α-SMA), and p-selectin was performed in the kidney. In the non-drug cases, statistical differences among age, gender, PMI and each immunoreactivity were investigated. Analysis of variance between drug- and non-drug group, and ratio of each immunoreactivity in each drug were examined. In all cases, the relationship between the immunoreactivity of each antibody was examined.

Results: In the non-drug cases, the immunoreactivity of vimentin, nestin, and NGAL in the glomerulus decreased according to age and PMI. Moreover, immunoreactivity of HO-1 and NGAL increased in traumatic shock and burning cases, respectively. In the comparison between drug- and non-drug cases, the ratio of immunoreactivity of fibronectin, CD68, and p-selectin increased in the drug-related group. A significant difference was seen with drugs such as

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Ketoprofen, Methylephedrin, and atypical antipsychotics, in each immunoreactivity.
Conclusion: Examining the immunoreactivity of these markers in the kidney of drug-related cases provided useful information about the antemortem renal function and diagnostic meaning of cause of death.

Keywords: immunohistochemistry, drug-related renal damage, forensic autopsy, vimentin, fibronectin, statistical analysis