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PROCEEDINGS

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E4 Medicolegal Investigation in Two Cases of Suspected Anticoagulant Overdose

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Learning Overview: After attending this presentation, attendees will have a better understanding of the importance of a complete investigation to evaluate the role of medications in cases of anticoagulant users' deaths.

Impact Statement: This presentation will impact the forensic science community by underlying the need of combined clinical, laboratory, and toxicological approaches when evaluating a suspected case of anticoagulant overdose. The cases of two 80+-year-old patients under Vitamin K Antagonists (VKA) therapy with the suspicion of anticoagulant overdose will be presented.

Case 1: An 84-year-old woman taking warfarin for atrial fibrillation was admitted to the hospital for rectorrhagia. Laboratory tests revealed an International Normalized Ratio (INR) value >9 and high levels of creatinine and sodium, revealing a severe acute kidney injury. The patient died seven hours after admission. Autopsy revealed little hypostasis with evidence of rectorrhagia. Mucosal congestion involving the rectum and the distal colonic segment with bloody material in the lumen was found. Toxicological examination was not remarkable. The cause of death was due to a severe acute kidney failure.

Case 2: An 87-year-old man under acenocoumarol therapy for a prosthetic mitral valve was admitted to the emergency department with a history of diarrhea, drowsiness and altered consciousness with no evidence of recent head trauma. A Computed Tomography (CT) scan showed the presence of a subtle subarachnoid hemorrhage which, along with multiple bruises and a level of INR >20, which raised suspicion of an anticoagulant overdose. The patient died two hours after admission. Autopsy showed little hypostasis and extensive bruises. Severe bowel ischemia with melaena was found. Toxicological examination showed traces of acenocoumarol in the blood. The cause of death was due to multiorgan failure triggered by atherosclerosis-related mesenteric ischaemia.

VKA (acenocoumarol, warfarin) are widely prescribed for the prevention and treatment of thromboembolic complications of cardiovascular diseases.[1] Elderly and comorbid patients under anticoagulant therapy are at risk for anticoagulant overdose for altered kidney and liver function. According to an annual American report, 1,766 cases of exposure to prescription warfarin were observed and 84% of those accounted for unintentional overdose in 2014.[2] Bleeding is a frequent side effect of this treatment, and most of the risk factors in unintentional overdoses seem to be related to patients' lack of information and education.[1] In case of supra-therapeutic dosing, very high INR values are found. VKA overdoses are relatively rare. The majority of the cases are asymptomatic or with minor hemorrhagic symptoms mainly represented by gingival bleeding, and epistaxis. Major bleeding episodes include bleeding from the gastrointestinal tract, deep muscle hematoma, ecchymoses on the extremities, hematuria, intracerebral hematoma, and intra-alveolar bleeding.[1,3-5]

Considering that chronic anticoagulant users should be monitored weekly by evaluating the INR, supra-therapeutic dosing may raise the suspicion of a medical liability or, even worse, intentional overdose. In cases of sudden death without a clear cause and with evidence of bleeding, performing toxicological tests and a complete autoptic examination as well as an accurate evaluation of medical records are recommended. All of the findings must be interpreted with considerable caution to avoid misinterpretation in such cases that may, in the worst case, lead to a miscarriage of justice.

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Anticoagulant Therapy, Overdose, Medical Liability