



G117 An Unusual Mechanism of Bladder Fluid Absorption With Fatal Fluid Overload in “Predisposed” Patient

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After this presentation, attendees will be aware of the possible clinical and legal implications following urothelial damage and fluid absorption

This presentation will impact the forensic science community by showing an unknown mechanism of fluid absorption with remarkable risk of complications due to fluid overload in “predisposed” patients.

An 85-year-old man had been undergoing hemodialysis treatments three times a week for the past three years. He was a water-controlled patient, not self feeding. One day he presented hematuria and the doctors decided to perform a continuous bladder irrigation. During the first day of irrigation, the patient did not have any problems and underwent his hemodialysis treatment as usual. Twenty-four to thirty-six hours after hemodialysis, while still undergoing irrigation, the patient gained 7.4kg. His wife said that the fluid introduced by bladder irrigation was not expelled, so the only explanation of this weight gain was the bladder irrigation procedure. Blood test results were as follows: Na^+ 130 ↓ (vn 130-148 mEq, intermedial data T1: 111, T2: 116, T3: 126), HCO_3^- 19.8 ↓ (vn 23-25 mEq, intermedial data T1: 16,2, T2: 17,8, T3: 22,5); Ph 7.36 ↓ (vn 7.35-7.45, intermedial data T1: 7.23, T2: 7.34, T3: 7.38), PCO_2 98 (VN 38-42 mmHg). These data show a mixed acidosis due to hypervolemia, responsible for the reduction of sodium and HCO_3^- and for the development of pulmonary edema which led to an alteration of the ventilation and a CO_2 increase. Unfortunately, the clinical situation deteriorated rapidly and the patient died. The autopsy revealed hypertensive heart disease with increase in weight (660g); the lungs weighed 790g (right) and 590g (left) and were congested and edematous. There was a presence of coagulated blood and heavily congested mucosa in the bladder.

Histological examination of the bladder revealed the absence of the urothelium, with tunica propria affected by a series of alterations likely to be explained in the context of an erosive inflammation (necrotizing). Correct functionality of urothelium is fundamental because it is impermeable to fluid, thus being an effective barrier against the passage of osmotic fluid from blood into urine, and has the capacity to adapt to the bladder volume. Damage or loss of the epithelial surface by chemical, mechanical, or other mechanisms implies a reduction or total loss of this important insulation function provided by an intact urothelium.

A condition of abnormal resorption at the vesico-urethral level can occur during TURP: transurethral incision may determine vascular lesions, creating conditions for the absorption into the circulation of the liquid used for washing during surgery. Resorption can determine the onset of actual pathological syndrome, even a serious one, defined precisely as TURP syndrome.

In conclusion, the loss of the urothelium led to an alteration in the permeability of the bladder and to an abnormal resorption of fluid resulting in hypervolemia. This was the cause of mixed acidosis and massive pulmonary edema which led to *exitus*.

Bladder Absorption, Hypervolemia, Acidosis