M209

Case report

A CASE REPORT ON INCONSISTENT POSTMORTEM THYROID FUNCTIONS BETWEEN FEMORAL BLOOD AND VITREOUS FLUID BIOCHEMISTRY

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BACKGROUND-AIM

Postmortem biochemistry can provide important information in determining the cause of death (COD). Out of postmortem specimens, vitreous fluid is ideal for postmortem biochemical analysis, as it is relatively isolated and less affected by postmortem changes (redistribution, hemoconcentration). However, equilibration of some analytes between blood and vitreous fluid can be affected by its anatomical location, as observed in this case, where postmortem femoral blood and vitreous fluid thyroid functions were used to conjecture premortem thyroid status of the patient in the absence of premortem values.

METHODS

The postmortem specimens of femoral blood and vitreous fluid were obtained during the autopsy and analysed for thyroid hormones in the absence of premortem thyroid hormone values.

RESULTS

A 28-year-old pregnant woman admitted at 26-weeks of gestation due to tachypnea and palpitations for 3-days. She had tachycardia (200bpm), with supraventricular-tachycardia on electrocardiogram, and poor left-ventricular function on echocardiography. She underwent an emergency hysterotomy to terminate her pregnancy but suffered a sudden death 6-hours after surgery. During the postmortem to ascertain her COD, vitreous biochemistry revealed a hyperthyroid picture with suppressed TSH and elevated free-T3 [TSH: 0.108mIU/L(0.465-4.68), free-T4: 13.22pmol/L(10-28.2), free-T3: 12.74pmol/L(4.26-8.1)], while femoral blood had a euthyroid picture [TSH: 1.32mIU/L, free-T4: 13.3pmol/L, free-T3: 4.54pmol/L]. Postmortem thyroid histology showed detached follicular-epithelial-cells (autolytic changes), excluding autoimmune thyroiditis causing hyperthyroidism thus supraventricular-tachycardia as the COD. Her COD was confirmed as acute on chronic myocarditis by postmortem cardiac histology.

CONCLUSIONS

Based on the clinical presentation, hyperthyroidism was a differential diagnosis in this case leading to postmortem thyroid investigations. T3-toxicosis on vitreous biochemistry was confounding with detached follicular-epithelial-cells mimicking lymphocytes, misleading towards autoimmune thyroiditis. Differences in thyroid hormone transportation between compartments explain the inconsistency of thyroid status between femoral blood and vitreous fluid. This case highlights the need to interpret postmortem biochemistry cautiously and arrive at conclusions with a holistic approach. Due to the lack of literature on the correlation of postmortem to premortem biochemistry, the postmortem specimen type best representative of premortem thyroid function requires further research.