

Ethanol-induced ketoacidosis as a possible neglected cause of sudden death in chronic alcohol consumers

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SUMMARY

Alcohol accounts for a great amount of deaths per year either due to the acute intoxication or due to the secondary impacts of acute or chronic alcoholism. Commonly, in large amount of such fatal cases blood alcohol concentration is low or absent and fatty liver disease is frequently the only pathological finding detected at the autopsy of alcohol consumer. We offer a short case report of a case with the following analysis of why we decided to consider alcoholic ketoacidosis in our differential diagnosis.

Keywords: metabolic disturbance – alcoholic ketoacidosis – chronic alcoholism – sudden death

Etanolom-indukovaná ketoacidóza: potenciálna príčina smrti u chronických alkoholikov

SOUHRN

Súdni lekári sa v každodennej praxi stretávajú s mnohými prípadmi náhlych úmrtí, ktoré musia zhodnotiť z viacerých aspektov, zatiaľ čo ich hlavnou úlohou je stanoviť príčinu smrti. Často sa stáva, že pitevný nález je nešpecifický a aj po vykonaní histologickej diagnostiky a laboratórnych vyšetrení ostáva príčina smrti nejasná. V zahraničí je bežnou rutinou vykonať toxikologické vyšetrenia so skríningom prchavých látok a čo najvyťažujúcejší biochemický rozbor dostupných biologických materiálov. Avšak, z mnohých dôvodov, paušálne vyšetrenie v takomto rozsahu si pracovníci u nás nemôžu dovoliť. Preto lekár priamo pri pitve čelí dôležitému rozhodnutiu: aký materiál odoberie a najmä, aké vyšetrenie navrhne vykonať. Keďže mnohé chorobné stavy sa prejavujú len rozvratom vnútorného prostredia organizmu, morfológický korelát v podobe orgánového nálezu môže pri pitve chýbať. Autori predloženého článku chcú preto pripomenúť, že najmä v prípadoch úmrtí jedincov s anamnézou chronického konzumu alkoholu, treba myslieť na možnosť alkoholického ketoacidózy. Tento špecifický stav si za účelom confirmácie vyžaduje vykonať cielelaboratórne vyšetrenia, výsledky ktorých, ak sú „naordinované“ správne, poskytnú lekárovi možnú príčinu smrti. Na potvrdenie diagnózy nestačí len stanoviť koncentráciu acetónu, ktorý býva zvýšený aj pri iných typoch ketóz (diabetes mellitus, hladovanie), ale je treba stanoviť koncentráciu betahydroxybutyrátu v krvi, ktorý je prvoradým markerom tohto typu metabolickej dysbalancie.

Kľúčové slová: alkoholická ketoacidóza – chronický alkoholizmus – náhle úmrtia

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CASE REPORT

A 48-year-old man with a history of chronic alcoholism was found lifeless at his home address, lying in the bed. There was a bucket with vomited remnants found near the bed and an empty bottle of alcale mineral water. Because of unclear cause of death, medicolegal autopsy was ordered. Both, externally and internally the body did not show any signs of mechanical violence. The only pathological findings at the autopsy comprised very mild generalised atherosclerosis with no stenosis of blood vessels that would be of a hemodynamic importance, configuration of the heart with the weight of 400 g was physiological, with no signs of chronic venostatic changes on the internal organs. The deceased had diffuse alcoholic steatosis of the liver. The brain was mildly swollen. Results of alcoholimetric analysis performed by GC-FID (gas chromatography – flame ionization

detection) method confirming the Widmark's method were absolutely negative for the presence of ethanol in blood or urine. Toxicological analysis did not notice any psychoactive substances or medicaments, besides of positive acetone in blood, level of which was more than 400 mg/l, while acetonuria was also very high. As we are aware of the fact that alcoholic ketoacidosis can be a consequence of methanol or ethyleneglycol poisoning, we performed the analysis by the GC-FID method, which showed negative results. With the help of Department of clinical biochemistry we tried to perform experimental approximate informative measurement of betahydroxybutyric acid (BHBA) in the venous blood and tested it by the glucometer Free Style Optimum commonly used for POCT – point of care testing which is calibrated also for detection of BHBA in the capillary blood (correlation coefficient is 0,98 for the concentrations of ketone bodies between 0,07–5,2 mmol/l and accuracy of the measurement reflects in SD (standard deviation) form 0,03 mmol/l for low measured concentrations up to 0,2 for the high ones) BHBA concentration was increased but still cannot be considered reliable evidence as it is used in clinical practise for diabetic patients and forensic toxicology in our republic has no possibilities for measuring this very important marker of ketosis which seems to be the most important default of forensic toxicology especially in cases of fatal metabolic disturbances

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