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HOUSEHOLD CADMIUM POISSONING

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Abstract:

In household lethal intoxication with Cadmium is rarely met. In medico-legal practice we found 2 cases of lethal cadmium poisoning. In first case we found out that the members of the family consumed grape juice that was kept in a metal recipient.

In second case a man presented a light alteration of the general state. He was brought to the hospital where the death was established. Conclusions – In this two cases of unexpected death the source of cadmium poisoning was unexpected in household.

Keywords: *cadmium poisoning, accidental death, household*

The lethal intoxication with Cadmium is rarely met in legal medicine practice. We present here a case of a child and an adult poisoning that showed different major microscopic manifestations.

Case 1: The four-year-old girl, PF, is hospitalised for throw-ups, 38.7°C temperature, and the refusal of food and sleepiness. From the anamnesis we found out that the members of the family consumed grape juice that was kept in a metal recipient and then sieved with a galvanised (with cadmium) sieve. It appears that the girl consumed most of the juice, a twin brother and her father consumed a smaller quantity of the juice. At hospitalisation the girl presented profound altered general state, coughs, bronchic hipersecretion, hepatomegaly, coma of I and II degrees, absence of pupilar reflexes, highlighted ROT, tonico-clonic convulsions.

An acute intoxication atropine type was suspected with an unknown substance (toxicologically unconfirmed). Autoptically we observed a hepatomegaly 25/15/21 cm, sharp anterior edge, light brown parenchyma, on which there were round clear areas yellow orange, with a

diameter between 1.5 and 2 cm, friable zones in comparison with the rest of the parenchyma, in a section, the area was micronodular, and the lobular drawing is highlighted. Minimum renal modifications took place, pale cortical with a wide cortico-medular limit.

The toxicological investigation infirm the atropine intoxication, but highlights the toxic concentrations of cadmium: 185 μ g/100 gr. in the liver, and 615 μ g/100 gr. in the renal tissue. The determinations were made using spectrofotometry of atomic absorption.

The tests for other toxic substances were negative pesticides, drugs that have a SNC and neurovegetative affect, alkaloids, anesthetics, anorganic, volatile, metallic (Pb, As, Hg, Zn) toxins were absent.

The histopathological test established the presence of massive hepatic modification with panlobular vacuolar dystrophy, infiltration with lymphocytes and plasmocits on unequal intensity, relatively well determined in some areas.

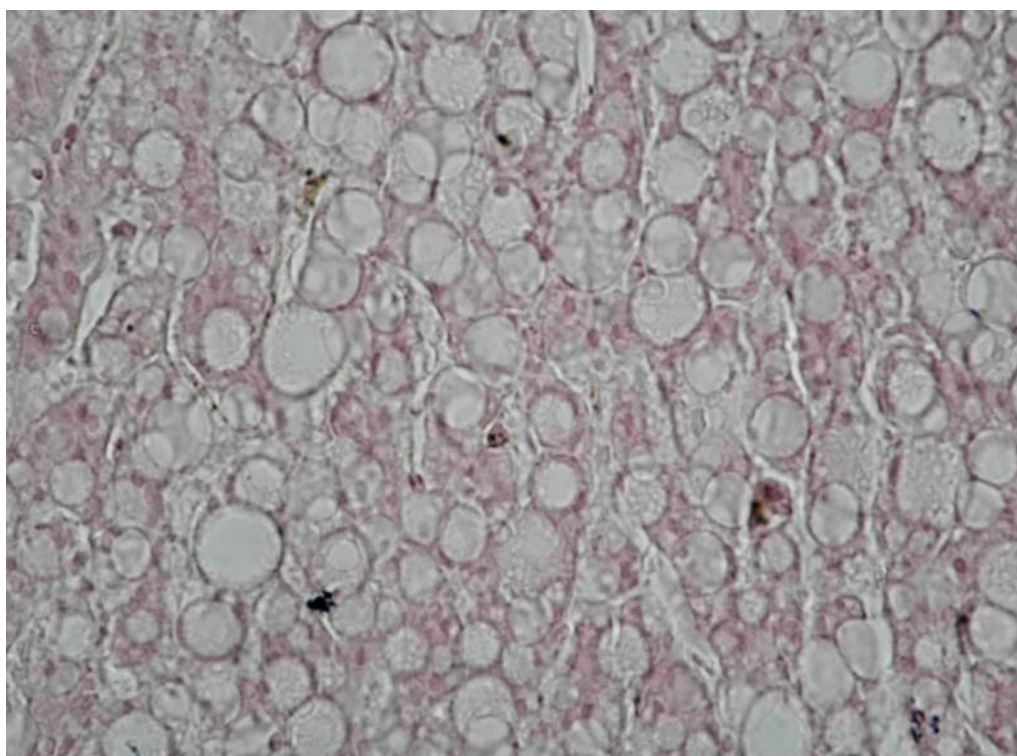


Fig. 1. Panvacuolar hepatic dystrophy col. HE x200

The renal affectation was stasis on medullar and at cortico-medularae junction, haematic thrombi, reduce perivascular haemorrhage, tubular necrosis and necrobiosis. In glomerular capillary we found unequal stasis, hipercellularity, narrower of glomerular filtration space.

Case II: The 47 year old man presented a light alteration of the general state, for which he was recommended aspirin and paracetamol a day before his death. He presented macroscopically haematuria, for which he was recommended to be hospitalised for the next day. At his home, he

felt sick and threw-up. He was brought to the hospital where the death was established.

Autoptically at the deck, there was a small haemorrhage of 0.2-0.3 cm, and at the right cerebellum lob in the white substance, an area with a low consistence, reddish substance was found. The cerebral ventricles contained a reddish liquid.

At visceral pleura some little haematic petechiae and moderate acute pulmonary oedema (fig. 2).

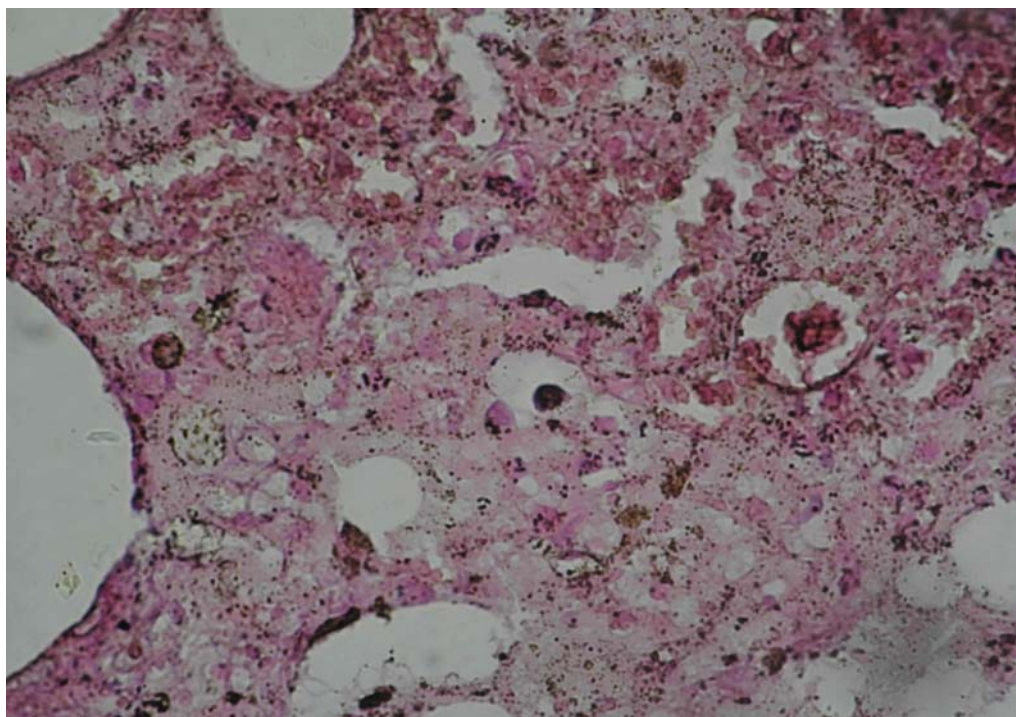


Fig. 2. Acute pulmonary oedema col. HE x200

At the hepatic level, the consistence was a little smaller, with chronic hepatitis modifications. The kidneys presented, at the cortical area, round haemorrhagic zones with a diameter between 1.5-2 cm, these zones continued at the cortical level affecting partially the medullar. At the renal pelvis on the left we observed a black reddish clot.

The histologic exam showed a cerebellum menigeal haemorrhage and recent cerebellum haemorrhagic areas, chronic emphysema and moderate interstitial oedema. Chronic persistent hepatitis with dystrophy. The most particular modifications are the renal modifications - necroses and proximal tubular pluricelular necrobioses, associated with proliferative glomerulo-nephrite. Isolated cortical hematic suffusions and more frequent at the renal papillae are also observed.

The toxicological exam was negative for alcohol, drugs that affect SNC, organofungicides, volatile toxic, aromatic hydrocarbons, halogenated organic solvents, metals (copper, Zn, Pb, As, Hg). The amoniphenasone and paracetamol in gastric tissue were highlighted. Through

spectrofotometry of atomic absorption we identified, 240 µg/100 gr. in the hepatic tissue and 1290 µg/100 gr. in the renal tissue.

Conclusions - The cases we presented were the only ones met in the Institute of Forensic Medicine from Timisoara in a 14-year period.

The macroscopically and microscopically findings were different: hepatic necrosis (at the girl) and modifications of the vascular permeability at the adult, which both determined multiple haemorrhages. The microscopically modifications proved the affection of the three target organs lung, liver and kidney.

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