

CASE REPORT

Sudden Death due to Hydatid Cyst Emboli; a Case Report

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Abstract: Echinococcosis is an infection caused in human by complex parasites that causes cystic hydatid disease. These infections are prevalent in most areas where livestock is raised in association with dogs. These parasites are found in all continents. Slowly enlarging cysts generally remain asymptomatic until their size has expanded. Here we present a case of sudden death following cyst emboli to the large veins and right heart of a young adult female.

Keywords: Death, sudden; echinococcosis; embolism; case report

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1. Introduction

Echinococcosis is an infection caused in human by complex parasites that causes cystic hydatid disease. These infections are prevalent in most areas where livestock is raised in association with dogs. These parasites are found in all continents. Slowly enlarging Echinococcal cysts generally remain asymptomatic until their expanding size or their occupation of space affects the spleen, lung, or brain (1-3). The liver and the lungs are the most common sites of these cysts. Since a number of years elapses before cysts enlarge sufficiently to cause symptoms, they may be discovered incidentally on a routine x-ray or ultrasound study (4-6). Sudden death following embolization of cysts to the large veins is a rare complication of this infectious disease. Previously, some cases have been reported in this regard (7-9). Here we report the autopsy findings of the deceased unknown woman who was referred to legal medical center of Iran with history of dyspnea for 6 hours followed by death without any further medical documentation.

2. Case presentation:

The deceased was a young adult female, who was referred to Kahrizak autopsy center, Tehran, Iran, by order of legal authority. With no significant medical history, the death was

reported by neighbors and EMS to the police center in suburb areas of Tehran. The victim was seen 1 hour before announcing dead, while she was complaining about shortness of breath and heaviness on the chest, but refusing to go to the doctor because of attributing the symptoms to air pollution and common cold. Neighbors called EMS with exacerbation of symptoms. The patient was announced dead upon arrival of EMS. The deceased didn't have any family members and identification card (she was most probably an illegal immigrant from east borders of Iran).

The body was that of a 30 year old, well nourished, well developed, female according to color of hair, skin, and teeth. There was no peripheral edema of the extremities. There was no area of congestion, cyanosis, bruise and abrasion. There was normal hypostasis in the posterior parts of body and complete rigor mortis. Scalp, skull, spine, membrane, and brain were normal. Trachea and larynx were normal. No fracture, pathology or hemorrhage were detected. The pleural cavities had no fluid or adhesion; however, dilated vein was noticed on the surface of left lung (figure 1). While cutting large arteries and large veins of the heart, multiple cysts (well defined, bubble shaped, round objects covered by shiny white membrane) 3 cm in diameter started to emerge rapidly and were extracted from inferior Vena Cava vein and right chambers of the heart (figure 1).

The heart was 300 grams in weight, appeared normal without any ruptured cyst in the chambers. Fibrosis, hyperemia, or any sign of infarction or hypertrophy weren't detected. Valves appeared intact. Coronary arteries were patent. There was no abnormality in large vessels.

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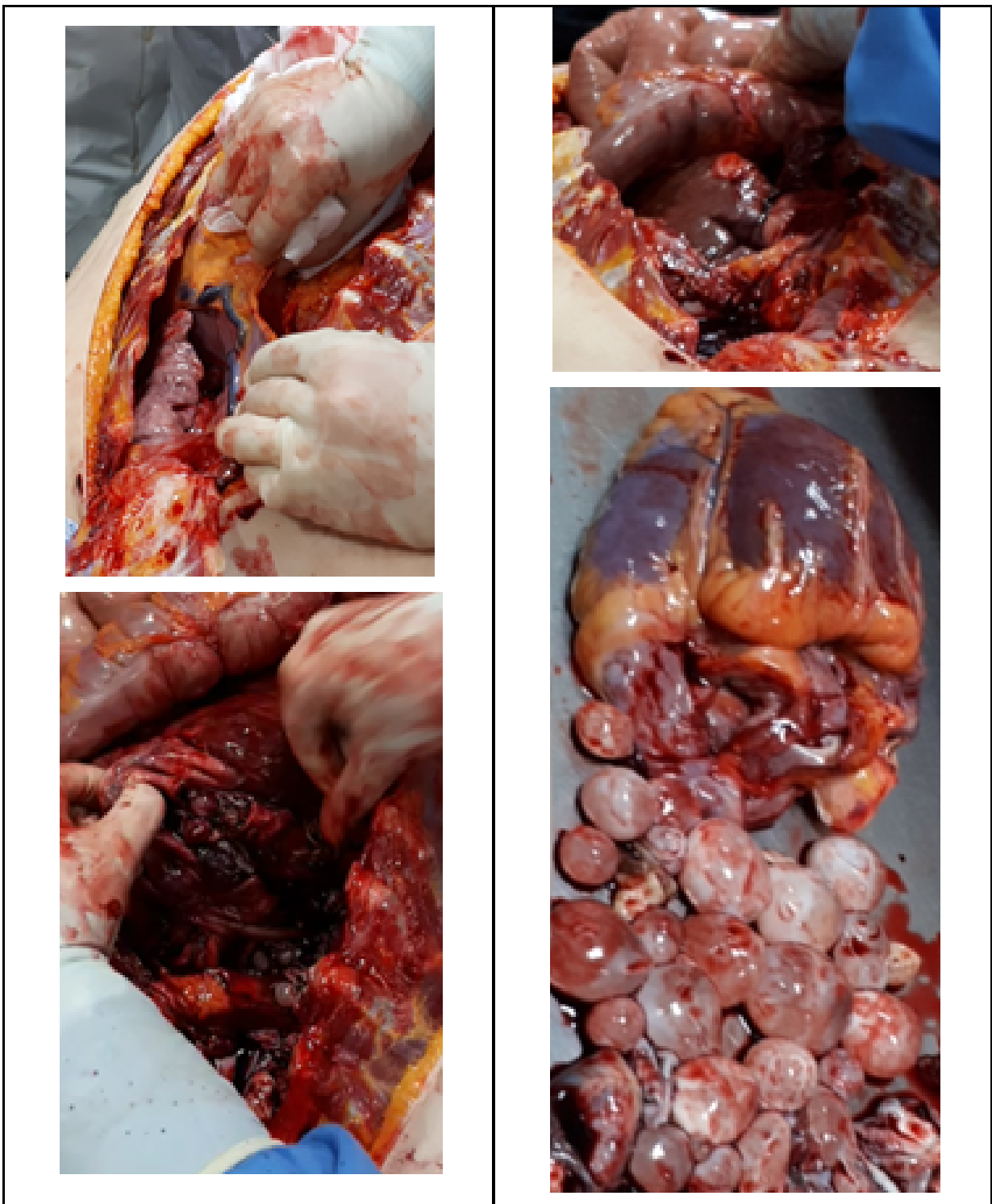


Figure 1: Anterior view of thoracic cavity (left upper) and Liver (right upper), cysts in right atrium and Inferior vena cava (left and right lower).

Lungs weighed 300 grams. Pulmonary tissue was congested. There were also several cysts in the pulmonary artery, which

formed saddle emboli. Liver weight was 900 grams. The surface was coarse and adhesion bands to near structures made it hard to remove the organ en bloc (figure 1). In several cuts congestion, nutmeg liver, and multiple cysts appeared. By removing the liver a lot of cysts came out of inferior vena cava and occupied the abdomen cavity gall bladder, and spleen (Figure 1).

Right kidney was not seen (previous surgery due to car accident). Left contained 2 small simple cysts, which measured 1 cm in diameter full of yellow clear fluid. In cortex cuts, medulla, and parenchyma appeared normal. Stomach and intestines contained ingested food and their mucous was intact.

No ischemic change was seen in the cardiac tissue and brain was reported to be normal. In the pulmonary tissue, mild to moderate alveolar edema was seen. No evidence of hydatid cyst or remnants were observed in lungs neither microscopic nor macroscopic.

Toxicological samples from vitreous, gastric content, urine, liver, and bile were obtained, analyzed, and reported negative for Alcohol (by GC-MS on vitreous), narcotic and other drugs (by TLC on gastric content, urine, liver, and bile). Histopathology study of liver and lung cyst samples revealed the cyst had a white thin fibrous membrane, which contained a clear fluid and some grain like particles laminated membrane of hydatid cyst with scolices and hooklets.

By analyzing autopsy, histopathology, and toxicology and history data the commission of three board certified forensic specialties decided to declare “cardiac arrest due to massive emboli by multiple hydatid cysts” as cause of death.

3. Discussion

An embolus is an intravascular solid, liquid, or gaseous mass that is carried by the blood to a site distant from its point of origin. The vast majority of emboli derive from a dislodged thrombus. Less common types of emboli include fat droplets, bubbles of air or nitrogen, atherosclerotic debris, tumor fragments, bits of bone marrow, and amniotic fluid; emboli lodge in vessels resulting in partial or complete occlusion. Depending on the site of origin, emboli can lodge anywhere in the vascular tree (10-12). The primary consequence of systemic embolization is necrosis of downstream tissue while embolization in the pulmonary circulation leads to hypoxia, hypotension, and right-sided heart failure. The consequence of embolization depends on the caliber of the occluded vessel, the collateral supply, and the affected tissues vulnerability to anoxia.

In this case, multiple hydatid cysts originated from liver and moved through vena cava to the right side of the heart and pulmonary artery, which is compatible with definition of emboli. We didn't witness any hypoxic change in tissue of the

brain and heart; the reason may be the rapid onset of symptoms, which lasted only 1 hour before occurrence of death and compatible with the history. So the application of the term “sudden death” seems to be accurate for our case.

It seems that along with ischemic cardiac problems and poisonings, cases such as the discussed one should also be considered in differential diagnosis of cause of death in young patients who face sudden death without any history of underlying illnesses. However, late diagnosis and weak clinical suspicion to rare cases such as this one might prevent the in-charge physician from saving the life of such patients.

4. Appendix

4.1. Acknowledgements

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4.2. Author's contribution

All authors met the four criteria for authorship contribution based on the recommendations of the international committee of medical journal editors.

4.3. Conflict of interest

The authors declared no potential conflict of interest with respect to the authorship and/or publication of this article.

4.4. Funding

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