

Systemic Complications of an Exceptional Case of Ruptured Left Intra-Ventricular Hydatid Cyst in a Child

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Abstract:

Cardiac involvement in hydatid disease is exceptional but has a formidable prognosis. Cardiac localization of hydatidosis exposes to the dissemination of vesicles in the systemic circulation, especially when it is located on the left side. Its treatment is essentially surgical, which helps to avoid complications and the spread of the disease.

We report the case of a 13-year-old patient with no particular pathological history, hospitalized for an ischemic stroke and limb ischemia, who was found to have a mass at the apex of the left ventricle on transthoracic cardiac ultrasound. The diagnosis of hydatid cyst was strongly suggested by the discovery of hydatid cyst membranes during the anatomopathological examination of the operative samples from the surgical thrombectomy of the left lower limb. Cardiac magnetic resonance imaging showed a mycotic aneurysm, while serology for hydatid disease was negative. A medical treatment based on albendazole was initiated, but the patient died in a context of multi-visceral failure postoperatively after the cardiac mass excision performed under extracorporeal circulation.

Keywords: Stroke, Echocardiography, Cardiac Hydatid Cyst, Limb Ischemia, Surgical Treatment.

Introduction

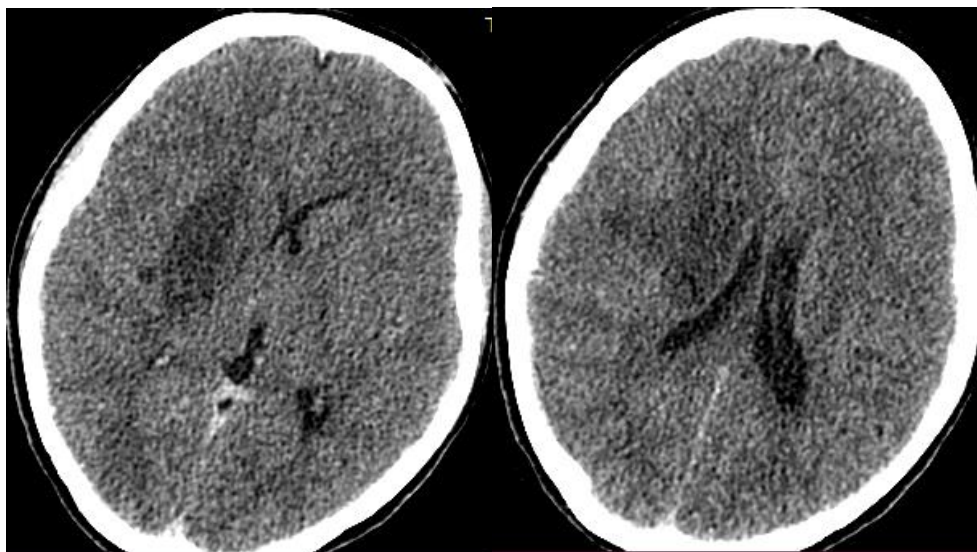
Hydatidosis is a cosmopolitan anthroponosis caused by the larval form of the *Echinococcus granulosus* parasite from the family of cestodes. It remains a common parasitic infection worldwide, particularly in countries around the Mediterranean. It is more frequent in livestock areas and in rural environments.

Hydatid cysts remain a significant public health issue in many regions of the world, necessitating ongoing efforts in terms of prevention, control, and treatment. In Morocco, the incidence is 53 cases per 100,000 inhabitants, with a female predominance and a sex ratio of 2/3, and an average age of 15 to 49 years in 59.1% of cases.

The most frequent locations are the liver and lungs. Cardiac localization is rare and exceptional in the pediatric population. It represents only 0.5% to 2% of all cases and is responsible for systemic dissemination or in the small circulation, causing hydatid emboli in case of intracavitary rupture.

Clinical observation

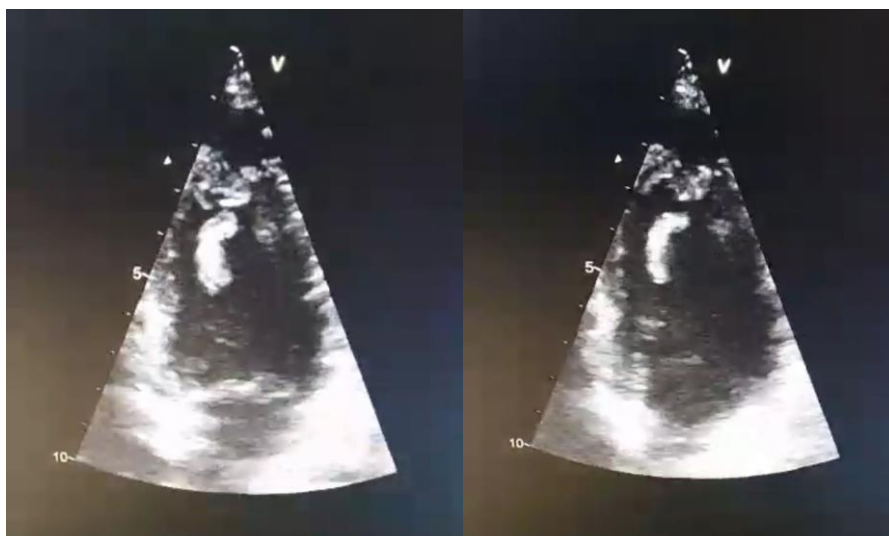
A 13-year-old patient with no particular pathological history was hospitalized in the cardiovascular surgery department for multiple arterial thromboses on a mobile mass of the left ventricle identified on echocardiography, suggesting a mobile thrombus or atypical mycotic vegetations. The patient was initially hospitalized in pediatrics for a sub acute ischemic stroke in the territory of the right deep Sylvian artery, occurring in a context of consciousness disorders, heaviness of the left hemibody, and homolateral facial paralysis evolving for five days before her hospitalization. During her hospital stay, she developed an asymmetry of the anterior tibial and popliteal pulses with coldness of the left lower limb. Arterial Doppler and angioscanner of the abdominal aorta and arteries of the lower limbs showed a total occlusion of the distal part of the left iliac artery extending to the proximal parts of the superficial and deep femoral arteries with repermeabilization downstream of the lower third of the left anterior tibial artery with no opacification distally. Parallel to this, repeated hemocultures on Sabouraud medium and a thrombophilia screening including plasma homocysteine levels and search for antiphospholipid antibody syndrome were negative. After a short stay in intensive care under heparin, the patient was referred to the cardiovascular surgery department where she underwent a successful thrombectomy. The operative samples sent to the pathology laboratory revealed two anhistous membranous structures of a hydatid cyst. The patient was put on a curative dose of Albendazole. Note that the patient's somatic clinical examination was normal apart from her left hemibody motor deficit. The rest of the assessment, including the electrocardiogram and CRP and PCT, was negative. The surgical indication was posed and the patient taken to the operating theater under extracorporeal circulation, and the shredded cystic membranes were removed. The patient was quickly extubated immediately postoperatively. The postoperative course was marked by the onset of neurological distress with conduction disorders characterized by bradycardia that required reintubation. The patient died in a scenario of multi-visceral failure.



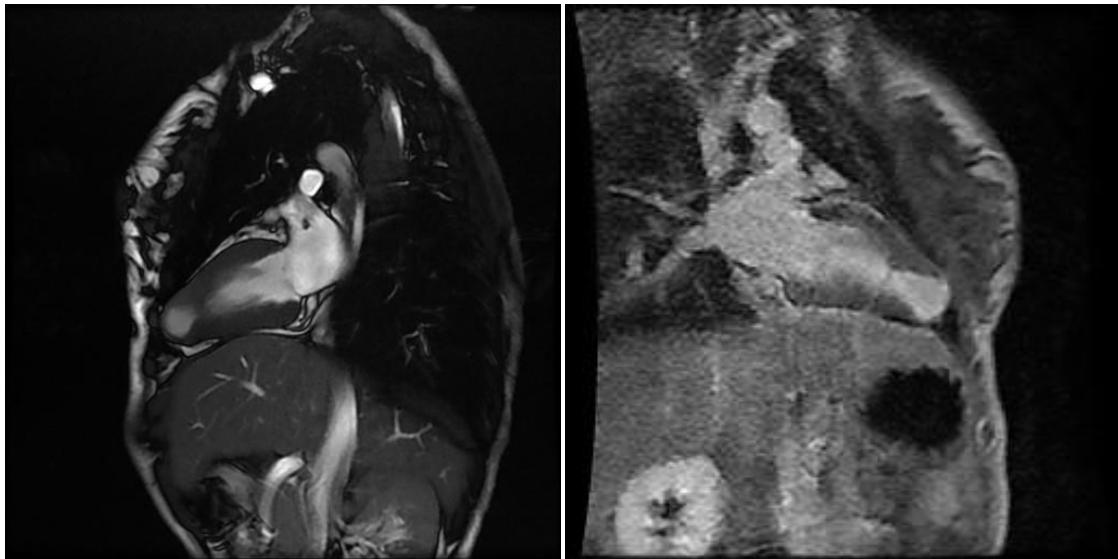
CT appearance of the ischemic stroke in the territory of the right deep middle cerebral artery



CT angiography of the abdominal aorta and lower limb arteries showing the thrombosed segments



Echocardiographic appearance of the left intraventricular mass



MRI appearance of the left intraventricular mass

Discussion

The larva of *Echinococcus granulosus* reaches the left cardiac cavities after escaping the pulmonary filter. From the left ventricle, the larvae are expelled into the great circulation, and through the coronary arteries, the parasite invades the myocardium. The development of the Cardiac Hydatid Cyst (CHC) is usually sub-epicardial for left heart localizations and sub-endocardial for right heart localizations due to the low-pressure regime of the right cavities. In our case, the cardiac localization was intracavitary and ruptured, leading to dissemination in the systemic circulation as evidenced by the results of the anatomopathological examination of the surgical specimens from the thrombectomy performed on the occluded arteries of the left lower limb, which revealed the presence of hydatid cyst membranes. The decision to treat her with albendazole was made preoperatively. Albendazole is currently the drug of choice. It is prescribed orally at a dose of 10-15 mg/kg/day in 2 daily doses, administered in cycles of 28 days with 2 weeks off between cycles. The treatment duration is typically 6 months, and its results vary according to the series.

In our case, the serology for hydatidosis was negative. However, in the literature, for cardiac localizations, hydatid serology is only positive in half of the cases.

The surgical indication was made upon the discovery of the cardiac mass and the systemic complications in a patient with no cardiovascular pathology justifying them. A cardiac MRI was requested to characterize the cystic mass.

The treatment of Cardiac Hydatid Cyst is surgical, performed under extracorporeal circulation; the surgical indication is formal once the diagnosis is made (except for surgical contraindications), as the natural progression is fatal. Currently, most authors agree on the necessity of surgery to slow down the progression.

Unfortunately, in our case, the postoperative progression was marked by the death of our patient, highlighting the extreme severity of this intracardiac localization and the accompanying surgery.

Conclusion

Cardiac hydatidosis presents serious risks with potentially fatal outcomes, making early diagnosis and effective management crucial. The discussed case highlights the severe consequences of a ruptured intra-

ventricular hydatid cyst in a child, leading to catastrophic events such as ischemic stroke and limb ischemia. Despite having no significant medical history, the patient suffered rapid health deterioration after surgery, ultimately resulting in multi-visceral failure. This emphasizes the necessity for preventive strategies in regions where the disease is common, as well as the importance of timely surgical intervention. The medical community is urged to improve surgical and postoperative procedures to enhance patient outcomes.

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