CASE REPORT

Primer hydatid cyst of the deltoid muscle

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SUMMARY

A primary intramuscular hydatid cyst should be considered for the differential diagnosis of cystic soft tissue masses especially in endemic areas, although primary muscular hydatidosis is a rare clinical entity. A case of a 48-year-old male patient with a primary intramuscular hydatid cyst located in the deltoid muscle is reported.

BACKGROUND

MRI findings that are atypical for a case of primary muscular hydatid cyst.

CASE PRESENTATION

A 48-year-old man presented at our hospital with pain and swelling in the right shoulder posterior, which had been ongoing for 8 months. In the physical examination, there was an immobile, soft, viscous mass in the anterior of the right shoulder. There was no deficit in motor sensation.

INVESTIGATIONS

For a differential diagnosis, first, a direct radiograph was taken and then contrast shoulder MRI examination was made. The right shoulder radiograph revealed a mass without any bone involvement (figure 1). On the MRI in the anterior part of the right shoulder deltoid muscle, peripheral wall contrast showed a cystic mass within a regular border, lobular contoured of 100×56 mm dimensions, containing multiple cystic structures of various sizes (figure 2). On diffusion-weighted imaging (DWI), increased diffusion was determined on the mass. The apparent diffusion coefficient (ADC) value was measured as $2.07 \times 10^{-3} \text{ mm}^2/\text{s}$. No other cystic lesions were determined on lung and liver scans which were performed. In the laboratory tests, apart from an increase in white cells ($11.380/\mu\text{L}$; normal values, $3.6\text{--}10.0 \times 10^3/\mu\text{L}$) no other pathology was determined in the routine haemogram and biochemical tests. The indirect haemagglutination titration test was found to be positive as 1/512. The findings were evaluated as a primary intramuscular hydatid cyst.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of a hydatid cyst localisation of the primary skeletal muscle is quite difficult. The differential diagnosis is required for skeletal muscle localised abscess, haematoma and tumours.

TREATMENT

Anthelmintic treatment was started preoperatively and continued for a specified time postoperatively. Complete surgical resection of the cystic mass from

the surrounding muscle tissue was performed (figure 3).

OUTCOME AND FOLLOW-UP

The diagnosis was confirmed histopathologically as a primary intramuscular hydatid cyst in the anterior of the right deltoid muscle.

DISCUSSION

A hydatid cyst is a parasitosis formed by 99% *Echinococcus granulosus* and 1% *Echinococcus multilocularis*. Infestations formed from *Echinococcus* species randomly settle in humans. The adult parasite settles in the small intestine of carnivorous animals, which are the final host. Eggs are spread into the environment through the faeces of those animals. They spread to intermediary hosts through the digestive tract. The embryos which emerge from the eggs pass into the blood from the duodenum and may thus spread to all body tissues.^{1–3}

Settlement has been reported at rates of 50–70% in the liver, 11–17% in the lungs, 2.4–5.3% in the soft tissues, 0.5–3% in the heart, 5% in the pericardium and 0.5–4.7% in the muscle and subcutaneous tissue.⁴ Although hydatid cyst may be seen in nearly every organ, it is less often located in muscle structures.⁵ The reason that it is rarely seen is thought to be larvae not sheltering in the muscles

Figure 1 Right shoulder radiograph shows soft tissue swelling and opacity.

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Figure 2 (A) Axial turbo spin echo (TSE) fat suppressed proton density weighted and (B) coronal TSE T1-weighted images show a regular-bordered cystic lesion located in the anterior part of the right deltoid muscle, containing multiple cystic structures of various sizes. (C) Coronal contrast-enhanced T1-weighted images show the cystic mass with peripheric contrast involvement and surrounding signal changes representative of oedema and inflammation. (D) The cystic mass shows increased diffusion on the diffusion-weighted imaging ($b=1000 \text{ s/mm}^2$). (E) Apparent diffusion coefficient map.

due to muscle contractions as lactic acid in the muscles does not provide a suitable environment for the parasite. Particularly in endemic regions, intramuscular hydatid cyst should be considered in differential diagnosis of cystic soft-tissue masses located in a muscle.²

MRI is the best method for differential diagnosis and planning surgery as the size and appearance of the cyst are shown, the localisation can be evaluated and the relationship with surrounding tissues is defined.⁶ In our case, a cystic mass within a regular border, lobular contoured of $100 \times 56 \text{ mm}$ dimensions, containing multiple cystic structures of various sizes in the anterior–superior part of the right deltoid muscle was seen on the MRI examination, and the peripheral wall of the cyst showed enhancement after contrast administration.

This multicystic appearance of the mass resembled that of sliced head cheese. Head cheese is a jellied meat dish usually made from the head of a pig or calf (figure 4).

In the case presented, the multicystic appearance relating to the daughter vesicles of the mass resembled sliced head cheese and as the head cheese sign can be considered to define hydatid cyst, it was thus diagnosed. Although simple cysts have low viscosity, the ADC values are high, the ADC values of hydatid cysts decrease due to the scolices, sodium chloride, protein, glucose, ion, lipid and polysaccharide content.⁷ In our case, increased diffusion in the mass was determined on DWI, and the ADC value was measured as $2.07 \times 10^{-3} \text{ mm}^2/\text{s}$.

Figure 3 Intraoperative image demonstrates mass in the right shoulder.

Figure 4 Sliced head cheese.

In cases that are suspected of being muscular hydatid cyst a diagnostic biopsy or aspiration should be avoided to prevent spread of the disease or rupture.⁸ Anthelmintic treatment should be given 1–2 weeks preoperatively and continued for 3–6 weeks postoperatively.⁹ This treatment protocol was applied to the case presented.

In conclusion, MRI is important in the preoperative evaluation of the mass with respect to an accurate diagnosis and preventing spread and the possibility of rupture from unnecessary diagnostic invasive procedures. Recognition of the head cheese sign on MRI may be beneficial in the diagnosis of hydatid cyst.

Learning points

- ▶ Isolated deltoid muscular hydatidosis is very rare.
- ▶ The multicystic appearance on MRI relating to the daughter vesicles of the mass resembled head cheese sliced.
- ▶ Surgical treatment is required.

Contributors All the authors contributed directly to the work described, have read the manuscript and approved for final submission.

Competing interests None.

Patient consent Obtained.

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