ANNALI ITALIANI DI CHIRURGIA

Digital Edition
e-publish on-line
ISSN 2239-253X
Direttore Nicola Picardi

Primary hydatid disease of the transverse abdominal muscle

A case report

Ann Ital Chir, Digital Edition 2020, 9
pii: S2239253X20031539 - Epub, March 9
free reading: www.annitalchir.com

Jovan Mladenovic*, Nebojsa Videnovic*, Kristina Mladenovic**, Sasa Mladenovic***, Rasa Mladenovic*

**Faculty of Medicine University of Pristina, Kosovska Mitrovica, Serbia*
***Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia*
****Health Center Donja Gusterica, Lipljan, Serbia*

Primary hydatid disease of the transverse abdominal muscle. A case report

INTRODUCTION: *Echinococcus is a parasitic disease that affects all organs and tissues. The most commonly affected are liver (70-80%) and lungs (10-25%), while very rarely, in about 5% of cases, it can be found in the spleen, kidneys, brain, heart, pancreas, muscles and skeleton.*
CASE REPORT: *Although localization of hydatid cyst in muscle is rare, it is important to consideredPORT it in the differential diagnosis of a cystic mass in the muscle. Clinical diagnosis of cystic echinococcosis is based on general ultrasound imaging, CT, MRI, differentiation of Echinococcus-Ag, ELISA testing, immunoelectrophoresis (IEP), counterimmunoelectrophoresis (CIE).*
DISCUSSION: *Surgery is the primary treatment for muscle hydatidosis. We present our experience in treating the case of an infected hydatid cyst on transverse abdominal muscle, with infection extending to the right diaphragm and subcutaneous tissue of abdomen and thorax between the transverse abdominal and internal sternal abdominal muscles.*
CONCLUSION: *The goal of the surgical treatment is total evacuation of the parasite, "sterilization" of the residual cavity and handling of intraoperartive complications. The post-operative course was normal and the patient was discharged to home care ten days after surgery in good general and local condition.*

KEY WORDS: Abscess, Echinococcus, Infection, Muscle

Introduction

Echinococcosis is zoonosis, a parasitic disease, caused by *echinococcus granulosus, E. multilocolaris, E. vogeli* and *E. Oligarthus* [1]. The most frequent at humans is a cystic form of the disease caused by *E. Granulosus*, and rarely the alveolar one caused by *E. multilocularis* seu *alveolaris*.
Echinococcosis was well known in ancient times. It was first described by Hippocrates more than two thousand years as a "fluid-filled liver". The name *echinococcus* was first introduced by Rudolphi in 1801, and the first data on surgical treatment date back to 1884, when Thomas operated on the lungs.
Echinococcosis can affect all organs and tissues. The most commonly affected are liver (70-80%) and lungs (10-25%), while very rarely, in about 5% of cases, it can be found in the spleen, kidneys, brain, heart, pancreas, muscles and skeleton [2,6,9,10,11,12].
Echinococcus spp. requires 2 hosts to perpetuate their life cycle: direct and intermediate. The direct host is commonly a carnivore- dog, wolf and coyote- which carries the adult egg-producing tape-worm. Intermediate hosts include herbivores such as sheep, goats, cattle, pigs and even humans in which internal organs larval stages establish and develop.
Echinococcosis occurs in rural areas of the Mediterranean, Eastern Europe, Middle East, North Africa, Australia and South America. The incidence of echinococcosis in our region is reported in Raska district, in some parts of Vojvodina and at Kosovo and Metohija.

Pervenuto in Redazione Ottobre 2019. Accettato per la pubblicazione Novembre 2019
Correspondence to: Mladenovic Rasa, Faculty of Medicine University of Pristina, 38220 Kosovska Mitrovica, Serbia. (e-mail: rasa.mladenovic@med.pr.ac.rs)

Invaginated heads (protoscolices) develop into adult tapeworms if they are ingested by the definitive host.
Pathology: Humans are infected with echinococcosis by ingesting eggs of echinococcus spp. directly or indirectly: in contaminated food, water or soil, or through direct contact with animal hosts. In the duodenum the ingested ova lose their protective membrane which is dissolved by the digestive juice. This frees the embryos which burrow into mucosal capllares and then travel via the portal system to the liver. Although the liver represents the first filter to the further spread of embryos, some may bypass the liver and enter the inferior vena cava, thereby gaining access to other organs and tissues. An alternative path to the lung is intestinal lymphatics with the entry into the circulation by the way of the thoracic duct. Implantation of larve in parenchyma is reffered to as *nidation.*
Hydatid disease is characterised by the phenomenon of "clinical latency", a long-term joint life with parasites without clear manifestations of the disease. Diagnosis is often made when the cyst is complicated. The most common cyst complications are: rupture, infection, compression of adjacent organs and allergic reaction [6,9].
Clinical diagnosis of cystic echinococcosis is based on anamnesis and physical exams, laboratory findings, serological tests, general ultrasound imaging, CT, MRI, scintigraphy, laparoscopy and transhepatic cholangiography [2,4,6].

Case Report

A patient from Lipljan, 51 years old, was admitted to surgical clinic KBC Pristina in Gracanica, for tumour located below the rib cage on the right side (CT scan: Hydatid cyst in abdominal wall).
The blunt pain below the rib cage on the right side commenced a month prior to admission. Due to intensified pain and discomfort, she presented for medical examination in Laplje Selo, where the ultrasound imaging revealed a multicistic lesion on the liver measuring 16 cm in diameter, enhancing to parenchym in the liver and the gallbladder. Differential diagnostic considered hydated cyst. The doctor indicated CT scan and surgical consultation. CT scanning and surgical consultations were indicated.
Abdominal CT examination with and without i.v. contrast enhancement was performed in the "Sveti Nikola" hospital in Ratina. The slice thickness was 7 or 5 mm. CT scan detected a massive multilocular cyst measuring 13x9x16 cm, of clear content, well defined and without signs of infiltration, located in VII - VIII liver segments. The cyst was interposed between the transverse abdominal and internal sternal abdominal muscles, penetrating the abdominal wall muscles and stretching into subcutaneous tissue of thorax. Postcontrastly, there was no intracutaneous inhibition, but there was color change of a relatively thick (0.7cm) capsule. Normal liver parenchyma. Intrahepatic and extrahepatic bile ducts normal in size. Pancreas, spleen and kidneys normal in morphology. There was no free fluid in the abdomen. No underlying bone pathology.
Upon testing, the patient underwent surgical examination that revealed the presence of a clearly defined tumour, the size of a man's fist. The tumour was localized below the rib cage on the right side and extended through the subcutaneous region above the ribs. The patient was advised to undergo laboratory and serological testing prior to surgical treatment.
The following values were obtained at the Institute for Specialized Laboratory Diagnostics in Nis:
– Echinococcus-Ag 0,15 kU/L (0-0,35);
– SE 36/h; WBC 7,5 G/l (LYM 28,5%; MID 3,8%; GRN 67,7%); RBC 5,07 T/L, HGB 127 g/l
– Glucose 6,6 mmol/L, Urea 3,8 mmol/L, Creatinine 82,3 Umol/L, Proteins 77 g/L, Total bilirubin12,6 umol/L; AST 22 U/L; ALT 20 U/L; Alkaline phosphatase 75 U/L.
Upon testing, the patient underwent surgical examination that revealed the enlargement of the tumour presenting redness and fluctuation and indicative of abscess (Fig. 1). The patient was admitted to the department for surgical treatment. Following preoperative preparation, surgery was performed in general anesthesia.
Surgical findings: A subcostal incision made over the site of the the tumour the size of a child's head revealed a large abscess in subcutaneous tissue that was aspired. (Fig. 2) The abscess cavity extends via two routes into the muscles of the anterior abdominal wall into the thoracic cavity. The first route ended in the transverse abdominal muscle (*m. transversus abdominis*); after the evacuation of the pus from this area, the cyst membrane of 13 cm in diameter was located and completely removed (Fig. 3). The extension from the transverse abdominal muscle to the right hemidiaphragm was cleared of pus and the capsule removed. The second abscess rou-

Fig. 1: Tumour prior to surgery.

te, extending towards the thoracic cavity between the transverse abdominal and internal sternal abdominal muscles, was cleared of the pus and the capsule removed. The estimated 2000 ml of pus was removed during surgery. All cavities are washed well with povidone-iodine and a mild physiological saline. Drains were placed in subcutaneous space (in the transverse abdominal muscle, in the cavity extending to the right hemidiaphragm, and in the area between the transverse abdominal muscle and the internal oblique muscle). The wound was closed in layers.

The patient's postoperative course was uneventful. In addition to antibiotics therapy guided by antibiogram, the patient was treated with Mebendazol for 6 weeks with regular blood count and biochemic monitoring. The wound healed "per primam intentionem". Sutures were removed eight days after the surgery, and the patient was discharged to home care ten days after surgery. The last drain was removd three weeks after the surgery. Histopathological examination confirmed the diagnosis of hydatid cyst on transverse abdominal muscle.

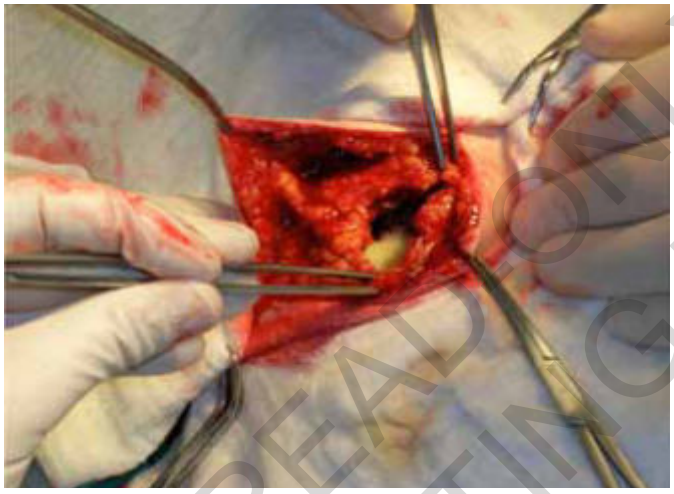

Fig. 2: Pus from infected hydatid cyst.

Fig. 3: Chitin membrane of the hydated cyst.

Discussion

Echinococcosis is a parasitic disease that commonly affects the liver and lungs. In 5% of all cases of echinococcosis, the localization of the cyst involves the spleen, kidney, brain, heart, muscle and bone. Although localization of hydatid cyst in muscle is rare, it is important to considered it in the differential diagnosis of a cystic mass in the muscle. Clinical diagnosis of cystic echinococcosis is based on general ultrasound imaging, CT, MRI, differentiation of Echinococcus-Ag, ELISA testing, immunoelectrophoresis (IEP), counterimmunoelectrophoresis (CIE) [2,4,5,6].

Treatment options for hydatid cysts include nonoperative or operative methods. Hydatidosis is mainly treated surgically.

Of the nonoperative methods, the most significant is medication therapy with benzimidazole derivatives (Mebendazole, Albendazole) and praziquantel (isoquinoline). Due to its poor absorption from the digestive tract and unreliable curative effect (only about 35%), and numerous dangerous complications in the form of agranulocytosis, hepatotoxic and nephrotoxic effects, medical treatment is recommended only as a complement to surgery in specific cases, in multiple recurrences as well in patients in whom surgical treatment is not possible.

Surgery is the primary treatment for muscle hydatidosis [3,7,8]. Surgical treatment should begin immediately after diagnosis to avoid complications that accompany echinococcal disease. The most common cyst complications are: rupture, infection, compression of adjacent organs and allergic reaction. We present our experience in treating the case of an infected hydatid cyst on transverse abdominal muscle, with infection extending to the right diaphragm and subcutaneous tissue of abdomen and thorax between the transverse abdominal and internal sternal abdominal muscles.

The goal of the surgical treatment is total evacuation of the parasite, "sterilization" of the residual cavity and handling of intraoperartive complications. The post-operative course was normal and the patient was discharged to home care in good general and local condition. The patient has been followed up after the surgery and there were no signs of recurrence.

Conclusion

Echinococcosis is endemic in Kosovo i Metohija, thus the incidence of rare localizations of primary hydatid disease. The diagnosis of primary hydatid cyst of tranversus abdominis was confirmed with CT findings, since the ultrasound indicated the presence of cysts on the liver. The detected value of Echinococcus-Ag was 0.15 kU / l, which was within the limits of reference values (0-0.35).

Surgery is the primary treatment for muscle hydatidosis.

Surgical treatment should begin immediately after diagnosis to avoid potent complications. The goal of the surgical treatment is total evacuation of the parasite, "sterilization" of the residual cavity and handling of intraoperartive complications. As an adjuvant to surgical treatment, the patient was treated with Mebendazol for 6 weeks with regular blood count and biochemical monitoring.

Riassunto

Gli organi più frequentemente sede di localizzazione di cisti idatidee sono il fegato (70-80%) e i polmoni (10-25%), mentre molto raramente, in circa il 5% dei casi, si possono trovare nella milza, nei reni, nel cervello, nel cuore, nel pancreas, nei muscoli e scheletro.
Sebbene la localizzazione della cisti idatidea nel muscolo sia rara, è importante considerarla nella diagnosi differenziale di una massa cistica nel muscolo. La diagnosi clinica di echinococcosi cistica si basa sull'ecografia generale, la TC, la risonanza magnetica, la differenziazione di Echinococcus-Ag, i test ELISA, l'immunoelettroforesi (IEP), la controimmunoelettroforesi (CIE).
La chirurgia è il trattamento principale per l'idatidosi muscolare. Presentiamo la nostra esperienza nel trattamento del caso di una cisti idatidea infetta sul muscolo addominale trasversale, con infezione estesa al diaframma destro e al tessuto sottocutaneo dell'addome e del torace tra i muscoli addominali trasversali e i muscoli addominali sternali interni.
L'obiettivo del trattamento chirurgico è l'evacuazione totale del parassita, la "sterilizzazione" della cavità residua e la gestione delle complicanze intraoperatorie. Il decorso post-operatorio è stato normale e il paziente è stato dimesso dalle cure domiciliari dieci giorni dopo l'intervento chirurgico in buone condizioni generali e locali.

References

1. Eser I, Karabag H, Gunay S, Seker A, Cevik M, Hasan Ali Sak Z, Yalcin F, Salih Aydin M: *Surgical approach for patients with unusually located hydatid cyst*. Ann Ital Chir, 2014; 85: 50-55.

2. Erler K, Komurcu M, Ozdemir MT, Ozkal UB, Basbozkurt M, Gunhan O: *Echinococcus infestation of Quadriceps femoris muscle misdiagnosed as a soft tissue tumor (a case report).* Turk. J. Med. Sci. 2003; 33: 127-30.

3. Stevovic D: *Hirurgija*, Savremena administracija, Beograd, 2000. (Serbian)

4. Way WL: *Hirurgija, savremena dijagnostika i lečenje,* Savremena administracija, Beograd, 1990. (Serbian)

5. Memis A, Arkun R, Bilgen I: *Primary soft tissue hydatid disease: report of two cases with MRI characteristics.* EUR Radiol, 1996; 9: 1101-103.

6. Merkle EM, Schulte M, Vogel J: *Musculosceletal involvement in cystic echinococcosis: Report of eight cases and rewiev of the literature.* Am J Roentgnol, 1997; 168:1531-534.

7. Keskin D, Ezirmik N, Karsan O: P*rimary hydatidosis of the gracilis muscle in a girl.* J Int Med Res, 2002; 30:449-51.

8. Tatari H, Baran O, Sanlidag T: *Primary intramuscular hydatosis of supraspinatus muscle.* Arch Ortop Trauma Surgery, 2001; 121: 93-94.

9. Tokman M, Bekler H, Alioglu Y: *Primary muscular hydatid cyst disease.* Acta Ortop Traumatol Turc, 1995; 29:167-69.

10. Uraiqat AA, Al-Awamleh A: *Hydrid cyst in the muscles: A case report.* JRMS, 2010; 17(Supp 1):72-4.

11. Ates M, Karakaplan M: *Hydatid cyst in the biceps and gluteus muscles: case report.* Surg Infect (Larchmt), 2007; 8(4):47-8.

12. Gedik E, Girgin S, Öztürkmen Akay H, Korkmaz Ö: *Primer hydrid cyst in paravertebral muscle*. Eur J Gen Med, 2007; 4(3): 143-46.