Case Report

A case report of successful percutaneous aspiration, injection, and re-aspiration (PAIR) technique for treatment of retrovesical pelvic hydatid cyst✩,✩✩

Sameer Peer, MD, DM✩✩, Harmandeep Singh Jabbal, MS✩, Paramdeep Singh, MD✩, Preethi Sharon M, MBBS✩, Sravya Kakkera, MBBS✩, Priya Bhat, MD✩

✩Department of Radiodiagnosis, All India Institute of Medical Sciences, Bathinda, Punjab 151001, India
✩Department of General Surgery, All India Institute of Medical Sciences, Bathinda, Punjab 151001, India
✩Department of Microbiology, Adesh Institute of Medical Sciences, Bathinda, Punjab 151001, India

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Abstract

Pelvis is a rare location for occurrence of hydatid cyst with only a few cases reported in the literature. All the previous reports of pelvic hydatid cysts were managed with either surgical exploration and excision or laparoscopic intervention. In this case report, we describe the successful treatment of a large pelvic hydatid cyst located in the retrovesical space using the percutaneous aspiration, injection, and respiration (PAIR) technique. To the best of our knowledge, this is the first successful demonstration of the PAIR technique in the treatment of retrovesical pelvic hydatid cyst. Percutaneous treatment of hydatid cyst in this case yielded desirable reduction in the size of the cyst with subsequent involution and relief of the pressure symptoms on the urinary bladder and obviated the need for a surgical procedure.

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Introduction

Hydatid cyst is a sequel of a parasitic zoonotic infection caused by the tapeworm Echinococcus granulosus, where the man acts as an accidental dead-end host [1]. Hydatid cysts most commonly occur in liver and lungs and less commonly in spleen, kidneys, bones, and the central nervous system [2]. Pelvis is a rare site for occurrence of hydatid cysts. Pelvic hydatid cysts may be primary or may be associated with dissemination of visceral hydatidosis [3]. Percutaneous aspiration, injection and re-aspiration (PAIR) technique has been shown to be an effective and safe method for treatment of hepatic hydatid cysts [4,5]. Few reports of successful PAIR in splenic

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✩ Corresponding author.
E-mail address: sameer.peer602@gmail.com (S. Peer).
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and renal hydatid cysts have also been published in the literature [6,7]. However, no report on PAIR for management of pelvic hydatid cysts in retrovesical space exists in the literature. In this case report, we describe PAIR technique for successful and safe treatment of pelvic hydatid cyst in retrovesical location under ultrasound (USG) guidance using Povidone iodine, chlorhexidine-cetrimide and normal saline as scolici- dal agents.

Case report

A 70-year-old female patient presented with complaints of heaviness in the lower abdomen associated with increased frequency of micturition which was noted to be gradually progres- sive. CT scan of the abdomen and pelvis demonstrated a large cystic lesion of approximate size 7.5 × 6.5 × 5.8 cm (Volume ~ 150 ml) in the retrovesical space with compression on the posterior wall of the urinary bladder (Fig. 1). The cyst showed multiple daughter cysts within. A diagnosis of hydatid cyst (Type CE2 according to WHO classification) was considered. The serum serology for E granulosus was found to be positive. Since the patient was considered a high risk for surgical intervention due to her age and co-morbidities, percutaneous treatment of the retrovesical pelvic hydatid cyst using PAIR was considered. The patient was started on tablet albendazole 400 mg BD, 5 days before the procedure and this was continued for 2 months after the procedure.

The site of puncture of the cyst was assessed after asking the patient to completely void the bladder and then the patient was placed in a supine position. Using 5 MHz curvilinear USG probe over the pelvis, the most superficial part of the cyst wall in contact with the anterior abdominal wall in the supra-pubic location was punctured with 18G spinal needle under USG guidance and the needle tip was confirmed within the cyst. After removal of the inner stylet, free backflow of clear fluid was obtained. Initial 10–15 ml of clear fluid were collected in a container and sent for parasitological analysis. After this, approximately 100 ml of clear fluid was aspirated using a syringe. During the aspiration, progressive shrinkage of the cyst was noted on USG. The scoliciidal agent used in our technique was a solution containing 10% w/v Povidone iodine (20 ml), Chlorhexidine gluconate (1.5% v/v)-cetrimide (3% w/v) solu- tion (30 ml) and normal saline (50 ml) to make total volume of 100 ml solution, which was then injected into the cyst through the needle which was retained within the cyst after aspiration of fluid. The contact time allowed for the solution within the cyst was 30 minutes after which the solution was re-aspirated. The re-aspirated volume was 95 ml, implying that approxi- mately 5 ml of solution was left within the cyst. At the end of re-aspiration, the membranes of the cyst were seen clumped within the cyst cavity with minimal residual cyst fluid. The size of the cyst at the end of the procedure was 4.2 × 2.8 × 2.1 cm. The needle was then removed, and sterile dressing placed over the puncture site. During the whole procedure, the vitals were monitored constantly using multichannel monitor. We had a crash cart by our side during the procedure for prompt management of any allergic and/or anaphylactic reaction during the procedure. The patient was kept under observation for 6 hours after the procedure and then discharged from the day- care ward. There were no signs and symptoms of anaphylactic reaction during or after the procedure. The analysis of as- pirated fluid revealed protoscolices or brood capsules within the aspirated fluid, thus confirming the diagnosis of a hydatid cyst.

On follow-up after 2 weeks, there was further solidification of the cyst components with no significant fluid component seen on USG (Fig. 2). The patient had complete relief of blad- der symptoms. Follow-up CT after 8 weeks showed a small pseudomass of size approximately 2.5 × 2.1 × 1.8 cm in the retrovesical space with few foci of calcifications (Fig. 3). The cyst was now re-classified as WHO stage CE5. Repeat serum serology demonstrated non-reactivity for E granulosus.

Fig. 1 – Axial CT image of the pelvic region shows a pelvic cyst with multiple daughter cysts in the retrovesical space (arrow). The lesion is seen causing mass effect on the posterior wall of the urinary bladder.
Discussion

In this case report, we have described the successful percutaneous treatment for pelvic hydatid cyst. This is the first report of PAIR procedure in management of retrovesical pelvic hydatid cyst. Direct puncture of hydatid cyst was considered unsafe in the past due to a potential risk of anaphylactic reaction in case of spillage of cyst fluid within the peritoneal cavity [8]. Moreover, the spillage of the cyst fluid teeming with protoscolices and brood capsules could lead to dissemination of the disease into a wider distribution [8]. Subsequently, PAIR technique was described for liver hydatid cysts and has been proven to be safe and effective in the minimally invasive treatment of liver hydatid cysts [9]. Use of PAIR technique in treatment of pelvic hydatid cysts may be technically challenging due to the complex anatomy of the pelvis and potential risk of injury to genitourinary viscera. In our technique, we assessed the route of puncture into the cyst using ultrasound. We emphasize on the fact that this technique should be attempted in pelvic hydatid cysts only if a safe route of needle entry into the cyst is confirmed on imaging. We performed the cyst puncture after the patient had completely voided the urinary bladder and this helped in apposition of the cyst wall with the anterior abdominal wall and thus facilitated the safe puncture of the cyst through a suprapubic approach. In case suprapubic approach is technically difficult, we propose an alternative route, such as transgluteal approach, for puncture of the cyst. We further advocate the use of ultrasound throughout the procedure since it provides real-time feedback on needle position as well as changes in the morphology of the cyst during and after the procedure. As far as the scolicidal agents are concerned, absolute alcohol has been widely used in PAIR procedures described in the literature [10]. However, few reports on the use of chlorhexidine gluconate-cetrimide, povidone iodine and hypertonic saline also exist [11]. We considered a combination of scolicidal agents, that is, Chlorhexidine-gluconate, cetrimide, povidone iodine and normal saline, for our procedure. Our choice in this regard was based on surgical literature which rates these agents as potent scolicidal agents and devoid of intoxicating adverse effects of absolute alcohol. Also, these agents are readily available in a hospital and thus can be cost-effective for the patient. We reiterate the need for continuous monitoring of the clinical condition of the patient during and after the procedure, since the risk of allergic and life-threatening anaphylaxis exists, and needs to be treated promptly if it occurs. However, meticulous technique to avoid spillage of cyst fluid is a paramount consideration.

Fig. 2 – Ultrasound of the lesion at follow-up, 2 weeks after PAIR shows a pseudomass in the retrovesical region. The membranes within the cyst appear clumped within the center of the lesion (arrow).

Fig. 3 – Axial CT image of the pelvis at the same level as Fig. 1, 8 weeks after PAIR procedure shows a retrovesical pseudomass (arrow). The mass effect on urinary bladder has reduced as compared to pre-procedure scan.
Conclusion

Percutaneous aspiration, injection and re-aspiration technique is safe and effective in successful treatment of pelvic hydatid cyst. Chlorhexidine-cetrizide, povidone iodine and normal saline solution may be used as a cost-effective sclerosical agent while performing the PAIR technique for pelvic hydatid cyst. Real-time ultrasound guidance is advocated for safe puncture, aspiration of cyst fluid injection and re-aspiration of sclerosical agent during PAIR procedure. Complete voiding of the urinary bladder may facilitate puncture of the pelvic hydatid cyst as it helps in apposition of cyst wall with the anterior abdominal wall for safe cyst puncture. PAIR procedure for pelvic hydatid cyst must be performed with continuous monitoring of the clinical condition of the patient in order to detect and promptly manage any allergic and/or anaphylactic reaction during or after the procedure.

Patient consent

The authors declare that a written informed consent has been obtained from the patient for publication of this case report.

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