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Giant peritoneal loose body in a patient with end-stage renal disease

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Abstract

A 72-year-old male with end-stage renal disease underwent a computed tomography scan to assess renal function. An oval-shaped mass, 50 mm × 60 mm in size, was discovered incidentally in his recto-vesical pouch. Because it was suspected to be a teratoma, which could be an impediment for future renal transplantation, surgery was performed. It revealed a giant peritoneal loose body, a rare entity, that has not been reported before in patients with renal chronic insufficiency.

Keywords

Appendix epiploica, peritoneal loose body, radiology, surgery

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Introduction

Peritoneal loose bodies (PLBs) are rare entities found incidentally during routine examinations or as a result of complications that intervene by their extrinsic compression. Their pathophysiology is thought to derive from torsion, infarction, and calcification of appendices epiploicae,[1] although other origins have been reported (calcified fibromyoma, auto amputated adnexa, calcified extra uterine pregnancy).[2–5] In rare instances, they can grow to more than 5 cm in size due to protein absorption from peritoneal serum, in which case they are called giant PLBs.[6] We report an unusual case of giant PLB discovered during imagistic explorations in a 72-year-old male proposed for kidney transplantation due to chronic kidney disease.

Case presentation

A 72-year-old male was referred to our unit because of an incidental computed tomography finding of a solid, well-defined mass, 58/65/48 mm in size, with central calcification of 23/27 mm, located in the pelvic cavity, between the sigmoid colon and the urinary bladder, thus highly suggestive of teratoma (Figure 1). The patient was diagnosed with stage V chronic renal disease, supposed to occur due to acute tubular necrosis a year before consultation and has since received hemodialysis three times weekly. Due to the above imagistic findings, kidney transplantation was temporarily excluded from the possible therapeutic management of his kidney disease.

His case history revealed associated obesity (body mass index of 37 kg/m^2) and hypertension. On physical examination, no abnormality was found. Colonoscopy revealed grade II hemorrhoids, otherwise—normal colonic mucosa. Tumor markers were within normal ranges. Biochemical analyses showed elevated triglycerides, total cholesterol level, urea, and creatinine. Exploratory laparotomy was performed with discovery of a white, oval-shaped PLB, 5.8 cm × 6.5 cm in size, situated in the recto-vesical pouch, with a smooth, hard cartilage surface (Figure 2). The cross section revealed a central calcified area (Figure 3). Postoperative recovery was uneventful.

On histopathologic examination, the lesion consisted of lamellar connective tissue with diffuse calcifications (Figure 4).

The patient was discharged from the hospital on day 5 after surgery.

Discussion

PLBs or so-called peritoneal mice have not been reported in patients with renal chronic insufficiency. They are defined as bodies that developed free from the lining of the abdomen,

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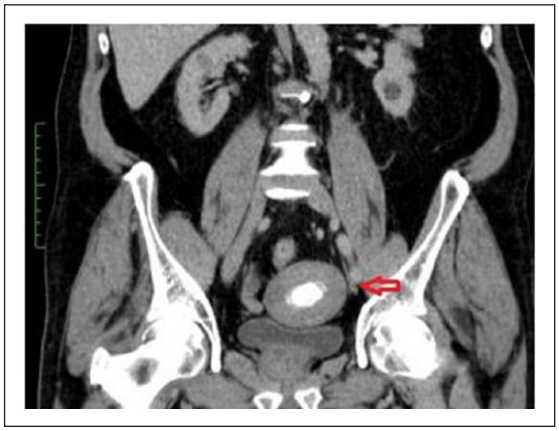

Figure 1. CT scan (coronal plane) showing a solid mass with central calcification.

Figure 2. Intraoperative view of PLB.

resembling the loose bodies found in joints.[7,8] PLBs' size usually ranges from 5 to 25 mm, and they generally do not cause any symptom. Few cases have been reported with a diameter of more than 5 cm, the biggest one measuring 95 mm × 86 mm.[8,9] In 1863, Virchow proposed the theory of PLBs' origin: obesity or infection can trigger an increase in the amount of fat in appendices epiploicae. This can lead to saponification and calcification of the fat and therefore to progressive obstruction of the blood vessels of the pedicle. When the vascular obstruction is complete, appendix epiploica suffers infarction and falls into the peritoneal cavity.[10] Nevertheless, Patterson[11] suggested that torsion and inflammation are the main factors for ischemia and detachment of appendices epiploicae. Our case supports Virchow's theory, the patient suffering from severe obesity.

We believe that the PLB in our case grew to its dimensions because the peritoneal fluid was rich in proteins. Han et al. suggested that the peritoneal membrane permeability in patients with end-stage renal disease may be altered because of

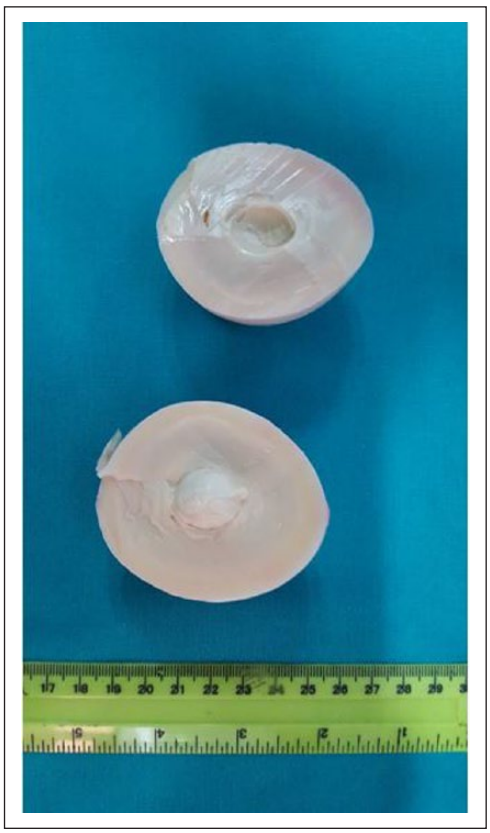

Figure 3. Cross section of the specimen.

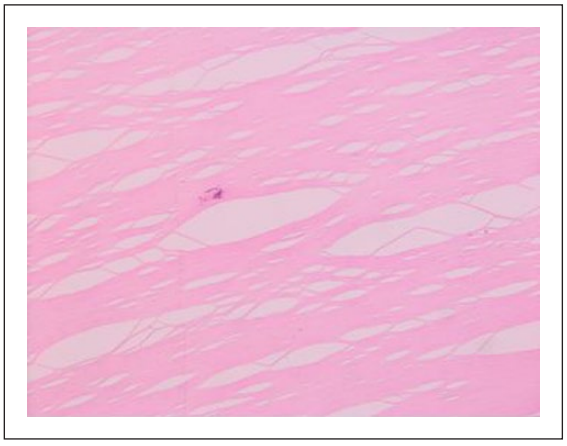

Figure 4. Lamellar connective tissue with diffuse calcification (HE, ×10).

peritoneal lymphatic channel obstruction. In nephrogenic ascites cases, he described the peritoneal fluid to be high in protein content.[1,12] In our case, we assume that due to end-stage renal disease, the patient's peritoneal serum contains a higher amount of proteins than in cases without renal insufficiency, thus favoring protein deposition on PLB and its faster growth.

Other possible etiologies include auto amputated adnexa, calcified extra uterine pregnancy, omentum,[6] auto

amputated subserosal uterine leiomyoma,[8] and fat tissue in the pancreas.

Symptoms in small PLBs are typically absent, and they are usually discovered incidentally at laparotomies or during imagistic analysis. On the contrary, giant PLBs may show with acute urinary retention,[13] constipation or, even, acute intestinal obstruction due to extrinsic compression. To differentiate them from other conditions and to evaluate PLBs preoperatively, a computed tomography (CT) scan or magnetic resonance imaging can be used. CT imaging often shows a concentric or oval-shaped, well-defined mass with central calcification, surrounded by peripheral soft tissue.[14] It is especially useful in discerning PLB from teratoma and fibroma, in which situations contrast enhancement is achieved on CT.[10] In patients with cancer history, the radiologist may proceed with more elaborate imagistic techniques. Allam et al.[15] reported the use of positron emission tomography with 2-deoxy-2-[fluorine-18] fluoro-D-glucose integrated with computed tomography (18F-FDG PET/CT) in differentiating PLB from metastatic malignancy.

Establishing differential diagnosis with teratomas, desmoid tumors, rhabdomyomas, ovarian metastases, fibromas, echinococcal cysts, tuberculosis, foreign body granulomas, urinary stones, gallstones, appendicitis, or calcified lymph nodes is important, because it guides the surgeon in choosing the most appropriate treatment.[16–18] Small asymptomatic PLB can be left untreated, while PLBs bigger than 5 cm are prone to cause chronic abdominal pain or other clinical manifestations and are removed surgically. In our case, a definite diagnosis could not be established preoperatively and, even if it was asymptomatic, in order to meet renal transplantation criteria and to exclude a potential malignancy, PLB's removal was preferred.

Conclusion

To meet eligibility criteria for renal transplantation, a thorough clinical and paraclinical examination is performed to exclude the presence of malignity in end-stage renal disease patients.

Existence of PLB, though rare, may become an impediment in achieving the management of renal chronic failure. Its surgical removal is recommended.

Declaration of conflicting interests

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Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

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Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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