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Giant Meckel Diverticulum Containing Enteroliths Diagnosed by Computed Tomography and Sonography

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Abstract. A 23-year-old male patient with giant Meckel diverticulum containing enteroliths is presented. Computed tomography (CT) and sonography were useful for correctly suggesting the diagnosis. The unique manifestations of this rare lesion are described.

Key words: Intestine, diverticulum – Giant Meckel diverticulum, enteroliths.

A Meckel diverticulum measuring more than 5–6 cm in diameter is customarily termed a giant Meckel diverticulum [1]. Preoperatively, giant Meckel diverticula can be particularly difficult to diagnose in adult patients because of their rarity and nonspecific findings by various imaging techniques [1–3]. An unusual case of giant Meckel diverticulum containing multiple enteroliths diagnosed by computed tomography (CT) and sonography is reported here.

Case Report

This 23-year-old Japanese man was admitted to the hospital with a chief complaint of intermittent epigastric pain of two months' duration. He also had a $1^1/_2$ year history of hypertension. On admission, his blood pressure was between 150/80 and 200/120 mmHg. A large, tender, firm mass about 8 cm in diameter was palpable in the epigastrium. Laboratory data included a serum norepinephrine of 4.73 ng/ml (normal, 0.06–0.45) and a urine vanillylmandelic acid of 25.3 mg/day (normal, 1.3–5.1).

Sonography and CT of his upper abdomen revealed a large, solid, right adrenal mass with a central cystic area displacing the inferior vena cava anteriorly and the abdominal aorta to the left. In view of the clinical findings and laboratory data, this mass was diagnosed as a pheochromcytoma.

A whirl-like pattern of small bowel loops, suggestive of volvulus, was observed at the lowest level of the upper abdominal CT scans. CT of the lower abdomen and pelvis was therefore repeated a week later. It demonstrated a large, low-density pelvic mass about 10 cm in diameter with a well-defined thin wall (Fig. 1A). This mass contained gas bubbles and several ball-like structures with high-density shell. Sonography likewise revealed a large cystic mass consisting of heterogeneous echogenic fluid and several strong echoes associated with acoustic shadows (Fig. 1B). The contents were observed to move, reflecting intestinal peristalsis. This sonographic finding suggested the mass was an intestinal structure, possibly a giant Meckel diverticulum. Review of the previous abdominal radiographs revealed several faint opacities with a laminated lucency consistent with enteroliths.

Surgical exploration disclosed a 13 × 10 cm Meckel diverticulum about 70 cm oral of the ileocecal valve (Fig. 1C). It contained 12 green-brown, round enteroliths about 2 cm in diameter (Fig. 1D). There was no inflammatory change or adhesion in the adjacent ileum. The right adrenal tumor was resected and the diagnosis of pheochromocytoma was confirmed. The patient recovered uneventfully.

Discussion

Meckel diverticulum is the most frequent congenital anomaly of the gastrointestinal tract, occurring in approximately 2–3% of the population. However, a giant Meckel diverticulum is rare, with a prevalence of less than 0.5% of all vitelline duct remnants [1]. The radiographic demonstration of reported cases has usually been by abdominal radiography and small bowel barium examinations [1–3]. A specific preoperative diagnosis is rarely made. Recently Bouin et al. reported the CT and sonographic findings of a giant Meckel diverticulum [4]. In their case, a large cystic mass was demonstrated in the umbilical region, but its differenti-

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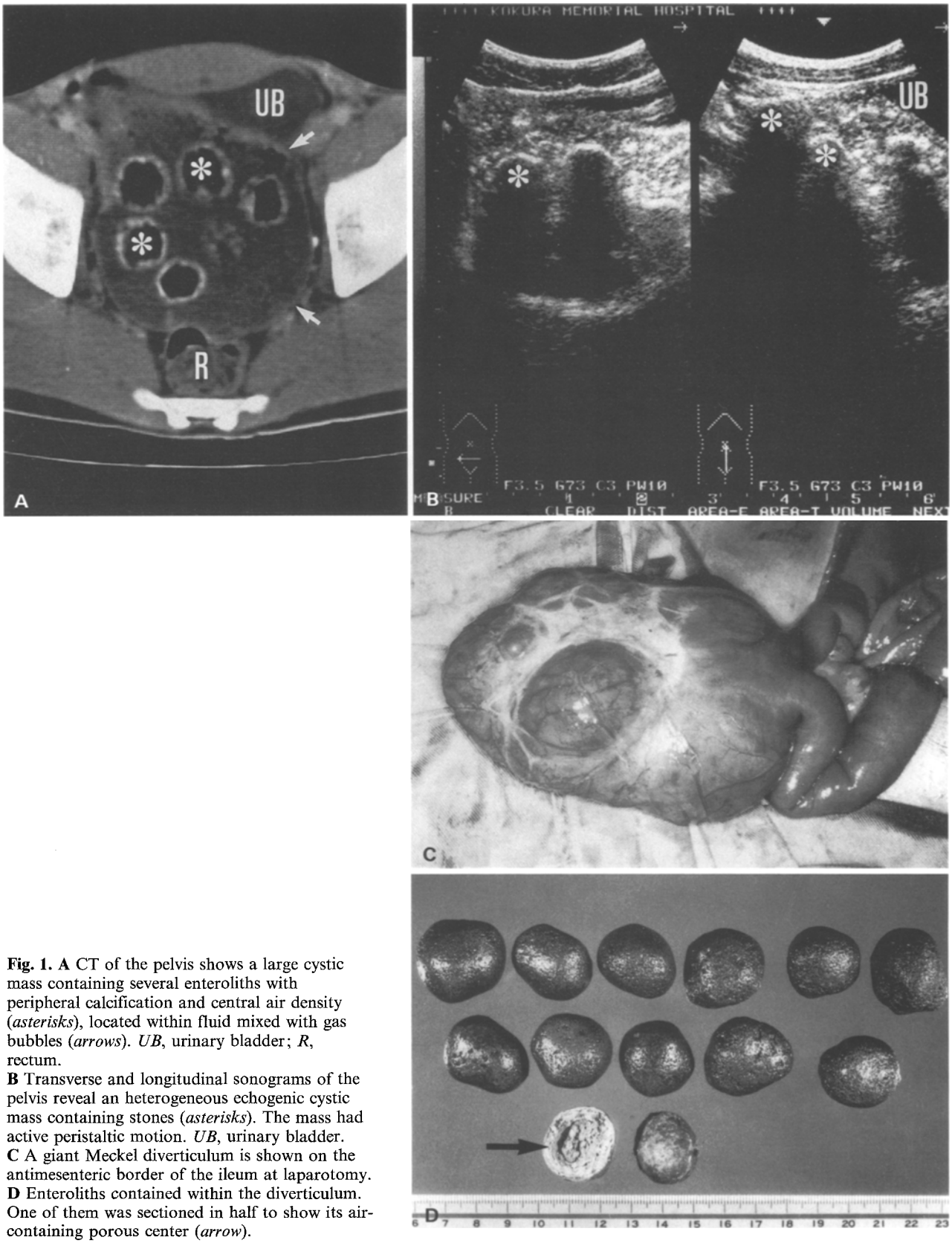

Fig. 1. **A** CT of the pelvis shows a large cystic mass containing several enteroliths with peripheral calcification and central air density (*asterisks*), located within fluid mixed with gas bubbles (*arrows*). *UB*, urinary bladder; *R*, rectum.
B Transverse and longitudinal sonograms of the pelvis reveal an heterogeneous echogenic cystic mass containing stones (*asterisks*). The mass had active peristaltic motion. *UB*, urinary bladder.
C A giant Meckel diverticulum is shown on the antimesenteric border of the ileum at laparotomy.
D Enteroliths contained within the diverticulum. One of them was sectioned in half to show its air-containing porous center (*arrow*).

ation from a mesenteric or urachal cyst was difficult.

The present case was unique in that CT showed a large pelvic mass containing fluid mixed with gas bubbles and enteroliths. During sonography these contents moved freely. This motion was considered to reflect peristalsis of the mass, indicating its origin from the intestine, and excluding the possibility of a more common pelvic abscess or mesenteric cyst [5]. CT facilitated the recognition of faintly calcified enteroliths and gas bubbles within the mass. Thus the true nature of this entity was confirmed more definitively than by abdominal radiography.

A giant Meckel diverticulum, although rare, should be kept in mind during the differential diagnosis of a large cystic pelvic mass. CT and sonography are useful for recognizing its contents and communication with the intestine, suggesting the correct diagnosis.

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