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CASE REPORT

Fetus-in-Fetu: Mimicking as Teratoma on Antenatal Ultrasound

Harpreet Kehal · Satbir Billing · Bal Krishan Sharma · Puneet Mittal

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Abstract Fetus-in-fetu is a rare and unusual condition. In this condition, a malformed parastitc fetal twin develops inside the body of another fetus, most commonly in the abdominal cavity. We present a case which was thought to be a teratoma on antenatal ultrasound. However, on subsequent postnatal imaging and surgery, it was proved to be fetus-in-fetu.

Keywords Fetus-in-fetu · Obstetrics · Teratoma · Ultrasound

Introduction

Fetus-in-fetu is a very rare condition, which was first described by Meckel in 1800. The incidence is about 1 in 500,000 births [1]. Less than 200 cases have been reported in the literature [2]. The most common location of malformed parasitic twin is in the abdominal cavity (most commonly in the retroperitoneum), although it has also been reported in other locations like posterior mediastinum, sacrococcygeal region and neck [2]. It is considered by some to be highly differentiated form of teratoma.

Key Messages Fetus-in-fetu is a very rare condition that is difficult to differentiate from teratoma on imaging. CT can be helpful in the diagnosis by demonstrating the vertebral column which is not seen in teratoma.

H. Kehal · S. Billing · B. K. Sharma
Sutlej Diagnostic center,
Nangal, Punjab, India

P. Mittal (✉)
Punjab Institute of Medical Sciences,
Jalandhar, Punjab, India
e-mail: drpuneetmittal@gmail.com

Case History

A 22-year-old female G_1P_1 came for routine antenatal ultrasound. The ultrasound showed intrauterine fetus corresponding to 35 weeks and 4 days gestation. A heterogeneous mass was seen in the fetal abdomen between the left kidney and the spleen. Several calcifications, some resembling osseous structures, were seen in this mass (Fig. 1). No other congenital anomaly was detected in the fetus. The provisional diagnosis of a teratoma was made and the patient was advised second ultrasound of the newborn after delivery.

The patient delivered a female baby at 39 weeks of gestation. Ultrasound of the infant was done on the same day of delivery. It showed a large complex mass measuring 9.0 x 6.5 cm in the fetal abdomen. It was lying between the left kidney and the spleen, and the left kidney was compressed pushed posteriorly by the mass. Severe calcifications and osseous elements resembling limb bones were seen in the mass (Fig. 2). The diagnosis of fetus-in-fetu was made with the second possibility of teratoma. CT sections (Fig. 3) were taken, which confirmed the diagnosis of fetus-in-fetu. On subsequent surgery, the mass was present in left upper retroperitnoeum. It was well encapsulated with vascular supply from the left renal artery. It was removed in toto. On examination, it was a malformed baby weighing approximately 450 g. It was anencephalic with a formed vertebral column and well-formed one upper and one lower limb (Fig. 4).

Discussion

Fetus-in-fetu is a very rare condition with less than 200 cases reported in the literature. It is diamniotic monozygotic twin pregnancy in which the parasitic malformed twin resides within the body of the other fetus [3]. It is the result of defective embryogenesis at an early stage of development with

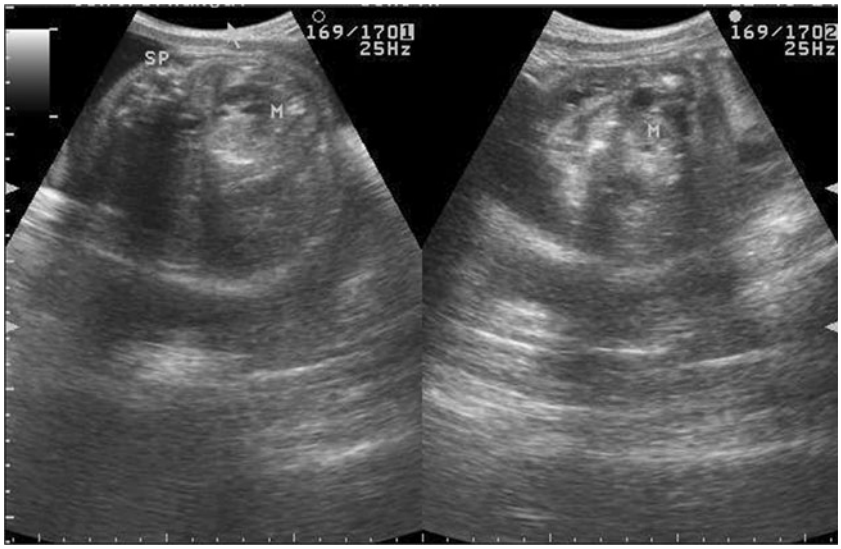

Fig. 1 Antenatal ultrasound images show heterogeneously echogenic mass with multiple calcifications in the fetal abdomen

separation of a totipotent cell mass, which is enclosed within the normally developing embryo. This cell mass gives rise to malformed parasitic twin inside the body of otherwise normally developing fetus. Usually there is only a single parasitic fetus, but it can be multiple with up to five fetuses reported in a single case [4]. These fetuses are classically anencephalic. Various fetal parts can be present like vertebrae (which can be dysplastic) and varying degree of developed limbs [2, 5].

Although it has been reported in adults, most of the cases are reported before the age of 18 months [2]. The antenatal diagnosis of this condition is difficult. The differential diagnosis of a calcified abdominal mass in a fetus or a new born includes teratoma, meconium pseudocyst and neuroblasoma. On prenatal ultrasound, the main differential diagnosis was teratoma. In fact fetus-in-feto can be considered a highly differentiated form of teratoma. However, there are differentiating features as pointed out by Willis [6] and Lewis [7]. They emphasised that fetus-in-fetu did not undergo malignant change and was more common in upper retroperitoneum, while teratoma can underdo malignant change and is more commonly seen in the lower abdomen. Willis further emphasised that the presence of the vertebral column strongly suggests the diagnosis of fetus-in-fetu, as it is not seen in teratoma. The demonstration of the vertebral column on routine radiography is difficult if it is underdeveloped and dysplastic [8]. In these cases, CT can help reach the definitive preoperative diagnosis

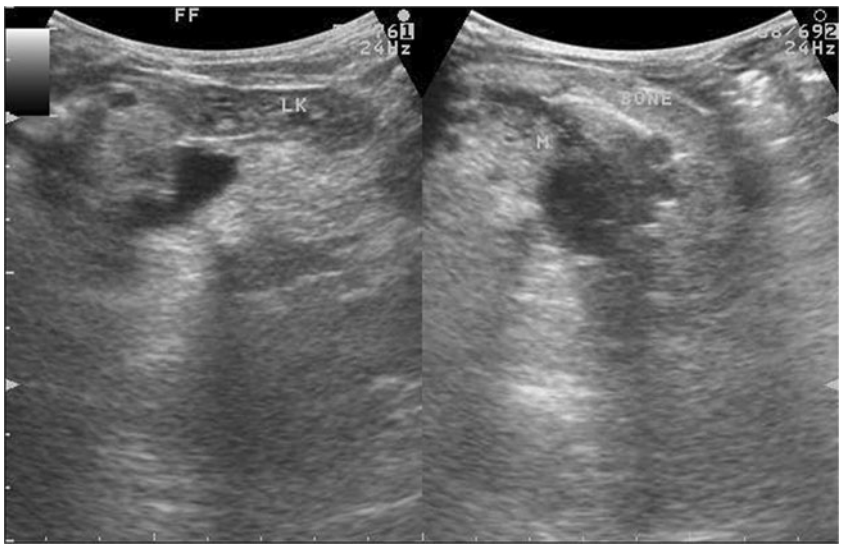

Fig. 2 Postnatal ultrasound of the newborn shows linear echogenic structure resembling bone

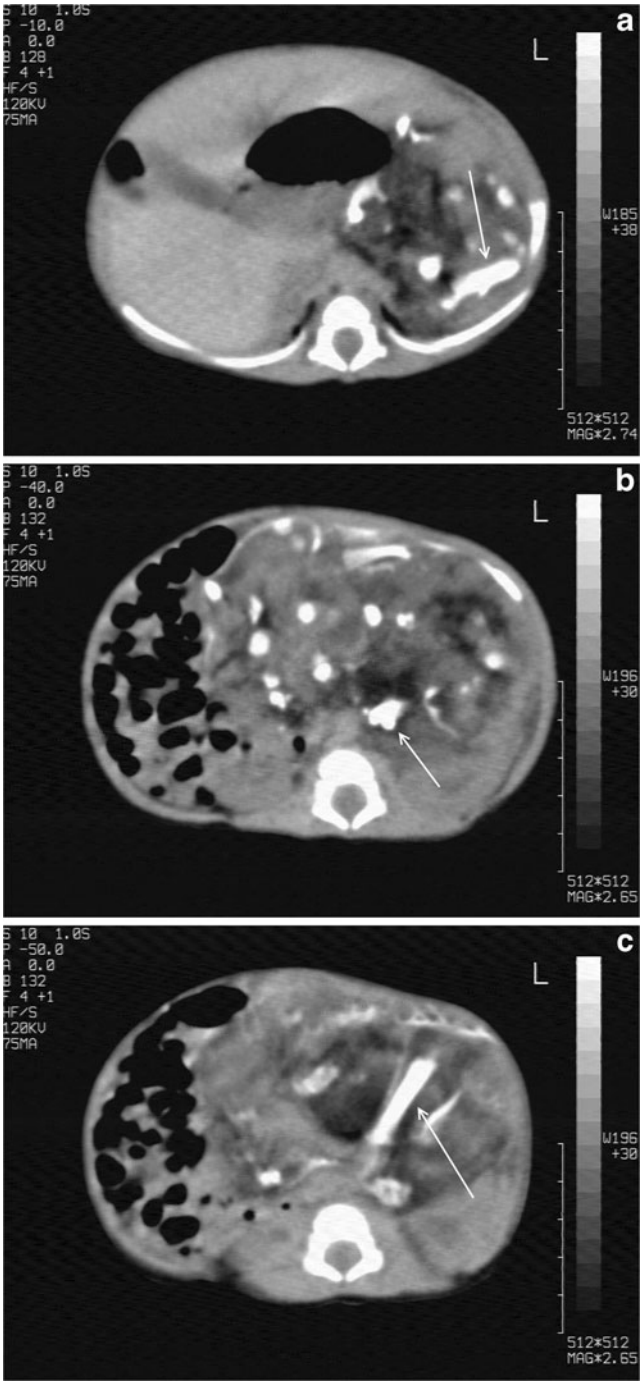

Fig. 3 Axial CT images show heterogenous mass in the retroperitoneum on the left side with multiple low attenuation areas representing fat and multiple high attenuation areas resembling bones (*arrows* in **a** and **c**) and vertebra (*arrow* in **b**)

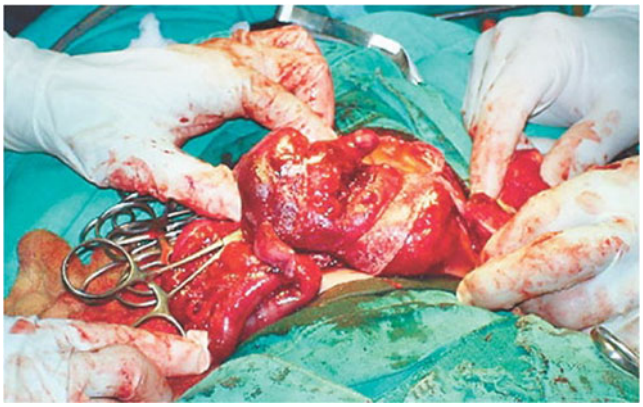

Fig. 4 Surgical image shows anencephalic malformed fetus

by demonstration of the vertebral column. Moreover, CT can show well-formed limbs in fetus-in-fetu, which is not a usual feature of teratoma. Fetus-in-fetu should be considered in the differential diagnosis of any calcified intra-abdominal mass seen on antenatal ultrasound. It is said that fetus-in-fetu is characterised by peripheral non-septated fluid portion, which surrounds the central solid portion [9]. This appearance is different from multicystic mixed echogenicity mass seen in teratoma. This appearance was not identified in our patient and diagnosis was only suggested on postnatal imaging.

References

1. Grant P, Pearn JH (1969) Foetus in foetu. Med J Aust 1:1016–20
2. Arlikar JD, Mane SB, Dhende NP, Sanghavi Y, Valand AG, Butale PR (2009) Fetus in fetu: two case reports and review of literature. Pediatr Surg Int 25:289–92
3. Samujh R, Rao KL, Bhardwaj N, Katariya S (1993) Fetus in fetu. Indian Pediatr 30:397–9
4. Kimmel DL, Moyer EK, Peale AR (1950) A cerebral tumor containing five human foetuses: a case of fetus-in-fetu. Anat Rec 106:141–65
5. Iyer KV, Vinaya K, Haller JO, Maximin S, Barrerras J, Velchek F (2003) Multiple fetuses in fetu:imaging findings. Pediatr Radiol 33:53–5
6. Willis RA (1958) The borderline of embryology and pathology. Butterworth, London, p 147
7. Lewis RH (1961) Fetus-in-fetu and retroperitoneal teratoma. Arch Dis Child 36:220–6
8. Nocera RM, Davis M, Hayden CK Jr, Schwartz M, Swischuk LE (1982) Fetus-in-fetu. AJR Am J Roentgenol 138:762–4
9. Park YJ, Lee DS, Lee NH, Han SJ (2007) Prenatal diagnostic clue for fetus in fetu. Pediatr Surg Int 23:977–80