Foetus-in-foetu

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INTRODUCTION

Foetus-in-foetu is developmental abnormality secondary to the abnormal embryogenesis in a diamniotic, monochorionic pregnancy characterized by a reasonably well-formed foetus that is seen in the form of an encapsulated, pedunculated vertebrate tumour in the abdomen. It is an unusual condition in which foetus is enclosed within the abdomen of a normally developing foetus. This is an interesting rare case of a 6-year-old male child, who presented with progressively increasing abdominal lump since infancy. CT of the abdomen revealed a 17 cm, ill-formed complex, heterogeneous, encapsulated, foetiform, ossified mass in the upper abdomen. The diagnosis of a foetus-in-foetu was made. Complete surgical excision of the lesion was performed and the diagnosis was confirmed histopathologically.

CASE REPORT

Six-year-old male child presented with progressively increasing abdominal lump since infancy causing intermittent abdominal pain (Figure 1A). He was haemodynamically stable and the laboratory parameters were within normal limits. Abdominal examination revealed a tender, firm-to-hard palpable lump in the hypogastrium. USG showed a complex, heterogeneous mass in the abdomen and multiple echogenic areas with posterior acoustic shadowing. Plain radiograph (Figure 1B) revealed a large radio-opaque mass with areas of calcification. It causes displacement of bowel loops inferolaterally. Plain and contrast axial (Figures 2A–C) and reformatted sagittal (Figure 3A) and coronal (Figure 3B) abdominal CT demonstrated a large ill-formed, complex, heterogeneous, encapsulated, foetiform, ossified mass in the upper abdomen. The mass consisted predominantly of fat that contained multiple bony structures. The bony components resembled bones of extremities, phalanges, spinal elements and other osseous elements surrounded by fat. With these radiological findings, a diagnosis of foetus-in-foetu was made.

Exploratory laparotomy was performed and histopathological confirmation of foetus-in-foetu was made.

DISCUSSION

Foetus-in-foetu is a rare congenital entity in which a nonviable parasitic foetus grows within the body of its twin. This term was first coined by Meckel in the 18th century and the first case was reported by Young in 1809. The incidence is about 1 in 500,000 births and only about 100 cases have been reported till date in the available literature.¹ Many theories have been postulated to explain the exact pathogenesis of foetus-in-foetu. The commonly accepted theory is that it results from an abnormal diamniotic-monozygotic twin pregnancy in which a smaller cell mass is included within a maturing embryo due to unequal division of the totipotent inner cell mass of the developing blastocyst. However some believe, it may be a highly differentiated form of dermoid cyst, which itself is a highly differentiated form of a mature teratoma.²

Foetus-in-foetu usually presents as a foetiform osseous mass, often in the abdomen of its host, with the retroperitoneum being the most common site to be affected; however extremely rare in the pelvis, scrotal sac, sacrococcygeal region, mesentery and right iliac fossa.² The condition usually presents in childhood. Foetus-in-foetu is usually single, though as many as five foetus-in-foetu have been reported.³

Figure 1 (A) Photograph of patient showing distention of abdomen, (B) Plain radiograph demonstrates large radio-opaque mass with areas of calcification.

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Figure 2 Plain and contrast axial (A, B and C) abdominal CT demonstrates a large heterogeneous encapsulated mass in the upper abdomen containing fat, cyst and bones of extremities, phalanges, spinal elements (arrows).

Figure 3 (A) Reformatted coronal abdominal CT showing extremity bones (arrow), (B) fluid-filled cyst and the excised specimen corroborating CT findings, (C) Matured bony elements and small rudimentary limbs (arrow).

Foetus-in-foetu is usually within a capsule, which is an amnion-like membrane. Identifiable bones and fat may be seen on plain films but these findings are better demonstrated with CT or MRI. Vascular pedicle may be detected on CT scan.⁴ On USG, it is seen as a mass with a complex echo pattern, with fluid, soft tissue and calcification all being often identified within it. Foetus-in-foetu may increase in size and cause local mass effect and haemorrhage. Rupture is not common.⁵

Foetus-in-foetu usually resembles a poorly formed acardiac or anencephalic twin. The contents of the mass may vary; it may contain extremity bones, pelvic bones, ribs, thoracic and

abdominal organs, eyes, ears, mouth, skin, hair, nails, etc. Identification of the vertebral column secures the diagnosis of foetus-in-foetu and differentiates this entity from teratoma.⁶ Occasional cases have been reported in which the spinal column could not be identified at imaging.⁷ These cases probably were due to an underdeveloped dysplastic spinal column that prevented the identification of vertebral bodies on imaging.⁸

In conclusion, foetus-in-foetu is a rare clinical entity and diagnosis can be accurately made by CT imaging. The demonstration of spinal elements is the most definite of this condition to differentiate from a teratoma.

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Journal Scan

Kosuke Kawai, Donna Spiegelman, Anuraj H Shankar, Wafaie W Fawzi. Maternal multiple micronutrient supplementation and pregnancy outcomes in developing countries: meta-analysis and meta-regression. *Bull World Health Organ* 2011;89:402–411B.

To achieve Millennium Development Goal 4, i.e. to bring down the IMR, by 2015, various approaches concerning maternal and child health are being evaluated. Today approximately 1/3rd of child deaths are attributable to maternal and child under nutrition. Micronutrient supplementation during antenatal period is one of the suggested interventions. However, data obtained from various studies across the globe have shown variable results. A systematic review of randomized controlled trials conducted in Pakistan had no significant benefit of multiple micronutrients as compared to iron and folate. Another meta analysis conducted in low income countries resulted in a small increase in birth weight and a reduction in the prevalence of low birth weight by 10% but this effect was greater among women with higher body mass index. A double-blind trial conducted in Nepal resulted in non-significant 49% increase in neonatal mortality,

after which intervention was withheld. Present study is a meta analysis and meta regression to compare the effect of maternal multiple micronutrient supplementation with iron and folic acid on pregnancy outcomes in developing countries. Study analyzed all articles meeting inclusion criteria, published till 1st August 2010 from MEDLINE and EMBASE. It showed that maternal micronutrient supplementation increased birth weight, and reduced the chances of low-birth-weight infants than those who received only iron and folic acid supplements. However this supplementation had no overall effect on perinatal mortality. Authors have mentioned inclusion and exclusion criteria, confounding factors and limitations of study but they did not comment on adverse effects of multiple micronutrient. The evidence provided will not resolve uncertainties that exist about the public health value of prenatal micronutrient supplement use.

Contributed by

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