

Case report

Early antenatal ultrasound diagnosis of fetal intracranial teratoma

D HORTON, FRCR and D W PILLING, FRCR

Liverpool Women's Hospital, Fetal Centre, Crown Street, Liverpool L8 75S, UK

Abstract. The commonest fetal intracranial tumour is a teratoma. The prognosis is poor with death usually occurring shortly after birth. Modern high resolution ultrasound scanners facilitate examination of the cranial contents, allowing earlier diagnosis. We report a case where an intracranial teratoma was identified at 21 weeks gestation, the earliest gestational age that this has been reported. The ultrasound appearances are discussed.

Case report

A 32-year-old woman, gravida 5, para 4, was scanned as part of a routine early pregnancy assessment at 11 weeks gestation (by measurement of the crown–rump length). All previous children, three girls and one boy, were alive and well. A single live fetus was observed. The intracranial anatomy was too small for evaluation at this stage. The woman returned at 21 weeks gestation, and a repeat ultrasound scan was performed. This showed 11 mm cystic lesion within the brain. The cerebellum and choroid plexus appeared normal. There was no hydrocephalus and the liquor volume was normal. Unfortunately the images from this study were not retained. The woman returned 10 days later, at which point the lesion was identified as a 12 mm cystic lesion with solid components, appearing to arise from the midbrain (Figures 1 and 2). The ventricles were not enlarged. The choroid plexus remained normal. The lesion was thought to represent a brain tumour, possibly of pineal origin. A further scan at 24 weeks gestation demonstrated that the tumour had rapidly grown to 40 mm in diameter (Figure 3). The tumour appeared to extend into the right lateral ventricle, with slight increase in ventricular size. No polyhydramnios was present.

The rapid growth of the lesion indicated a very poor outlook with the potential for serious difficulties during delivery. After counselling, the patient opted for a medical termination of the pregnancy.

Post-mortem examination showed a stillborn

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Address correspondence to Dr D Horton, Paediatric Radiologist, Radiology Department, Royal Hull Hospitals NHS Trust, Hull Royal Infirmary, Anlaby Road, Hull HU3 2JZ, UK.

female infant with an enlarged head. The skull bones were thin, the sutures widely separated and the fontanelles enlarged. The face, eyes, ears and neck were unremarkable. On intracranial examination, a firm haemorrhagic 4 cm × 3 cm × 3 cm midline mass compressing the lateral ventricles was found. The rest of the cerebrum and the cerebellum were softened. The brain stem and spinal cord were normal, with no evidence of tumour. Microscopic examination of the mass showed neuronal tissue, the majority of which was immature with rosette formation. Luminal structures lined by primitive epithelium and muscle-like tissue were seen. There were areas suggestive of liver parenchyma and pancreatic tissue. Well formed organ structures were not seen. A congenital midline teratoma was diagnosed. No significant



Figure 1. 22 weeks gestation. Sagittal scan through the fetal brain with the cervical spine seen on the right. The lesion is in the centre of the brain. The solid component is seen as a bright area below the cystic element.



Figure 2. 22 weeks gestation. Transaxial scan. The solid/cystic lesion lies in the centre of the brain. The cerebellum lies to the right of the image.



Figure 3. 24 weeks gestation. Transaxial scan. The mass is clearly seen in the centre of the brain, and has increased in size considerably since the last scan. The ventricles are slightly dilated.

abnormality was seen on external or internal examination of the body, except for reduced muscular development and reduced amounts of subcutaneous fat for the gestational age for which no cause could be established. Radiographic examination showed a poorly ossified skull, but no other abnormality.

Discussion

Fetal intracranial tumours are rare [1]. They are usually associated with hydrocephalus and polyhydramnios [2], the presence of which merits close scrutiny of the intracranial contents. Several histological types of fetal intracranial tumour have been described; including teratoma [3–10], cranio-pharyngioma [10, 11], meningeal sarcoma [12], lipoma of the corpus callosum [13] and oligodendroglioma [14]. The commonest intracranial neoplasm in the new-born is a teratoma [15]. These are usually seen on ultrasound as large cystic masses with an echogenic solid component, although a predominantly solid variant can occur.

Hydrocephalus is commonly associated with intracranial teratoma. The head is often increased in size, and dystocia can occur [16]. A caesarean section may be required due to the head size and breech presentation. Intracranial teratoma has been associated with pulmonary hypoplasia [17], and high output cardiac failure [18]. A case of unrelated teratomas of the mother and fetus occurring simultaneously has been described [19]. The earliest reported diagnosis of an intracranial tumour was a cystic teratoma first seen at 24 weeks gestation [20].

High resolution ultrasound scanners give better delineation of fetal anatomy and allow early diagnosis of intracranial abnormalities. The ultrasound appearances of intracranial tumours are similar and a precise histological diagnosis from the scan is therefore often impossible. The commonest tumour is a teratoma. The prognosis, as with many fetal brain tumours, is poor. Early diagnosis may assist obstetric management.

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