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Fetal Adenomyomatosis - A Case Report

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Abstract **Case Report**

With an average incidence rate of 0.07-1.15%, foetal adenomyomatosis is a rare discovery during a third- trimester ultrasound. We describe a case of foetal adenomyomatosis that occurred at 37 weeks' gestation and was diagnosed 4 days after delivery. Clinicians must be aware of the implications of this illness and how to treat it effectively. A degenerative and proliferative condition called gall bladder adenomyomatosis is characterised by excessive epithelial proliferation along with muscularis propria hypertrophy. This results in intramural diverticula known as Rokitansky-Aschoff sinuses, which are mucosal outpouchings into or beyond the muscle layer (RAS). These sinuses get clogged with cholesterol crystals, which cause the comet tail artefacts on USG that are indicative of adenomyomatosis and are caused by reverberation artefacts. Because it is benign, there is typically no need for therapy. The condition resolves on its own and ultrasonography follow-up is necessary. Surgery is required when the condition is not resolving or the patient is symptomatic.

Keywords: Fetal adenomyomatosis, ultrasonography, comet tail artefact**.**

INTRODUCTION

From the embryonic foregut, the foetal gallbladder begins to mature about the fourth week of pregnancy. The foetal gallbladder, which often has an oval or teardrop form, plays no active part in the development of the embryonic gastrointestinal system. Early in the second trimester, the foetal gallbladder can be seen on ultrasound as an elliptical hypoechoic or anechogenic body to the right of the intrahepatic umbilical vein [1].The discovery of foetal adenomyomatosis during a third-trimester ultrasound examination is uncommon and typically incidental. Due to technical advancement and growing use of ultrasonography during prenatal checks, its incidence of diagnosis has increased in recent years [2].

CASE REPORT

At 37 weeks of gestation, a 28-year-old woman (gravida 1 para 1) arrived for a normal sonogram to check on the health of the foetus. Except for her 8 g/dl low haemoglobin, the mother had no complaints. The mother had no history of either high blood pressure or type 2 diabetes. Blood tests came back normal. Fetal lie was cephalic and had enough amniotic fluid on ultrasound. Gall bladder hyperechoic foci with comet tail V-shaped artefact were observed (Fig. 1). Other abdominal organs appeared to be healthy. Other anomalies were not found. At 38 weeks and 4 days gestation, the baby was delivered naturally via vaginal birth. Physically, the infant appeared pink, awake, and engaged. Anthropometric measurements were within normal range. The vital signs were within the usual range. Four days after birth, an abdominal ultrasound was done because the mother was worried about the results of the prior ultrasonography. This revealed hyperechoic foci in the gall bladder wall that produced comet tail artefacts (Fig. 2). There was no concomitant gallbladder wall thickening, pericholecystic fluid, or dilation of the intrahepatic or extrahepatic biliary ducts, which would indicate acute cholecystitis. The mother was counselled about the condition and advised yearly follow up with ultrasonography for the child till the adenomyomatosis resolved.

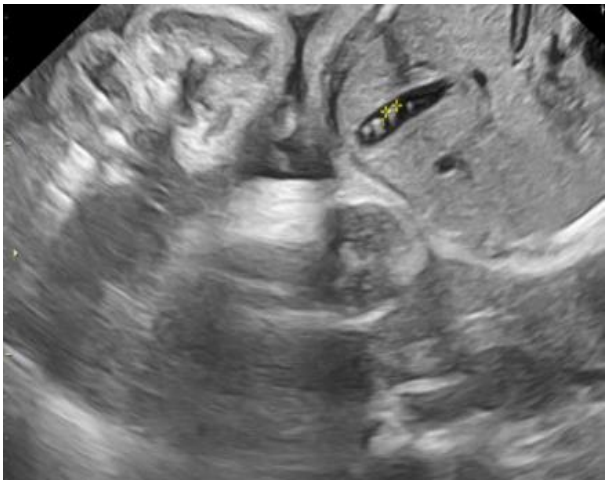

Fig. 1: Fetal ultrasound showed hyperechoic foci giving comet tail V shape artifact within gall bladder and GB wall

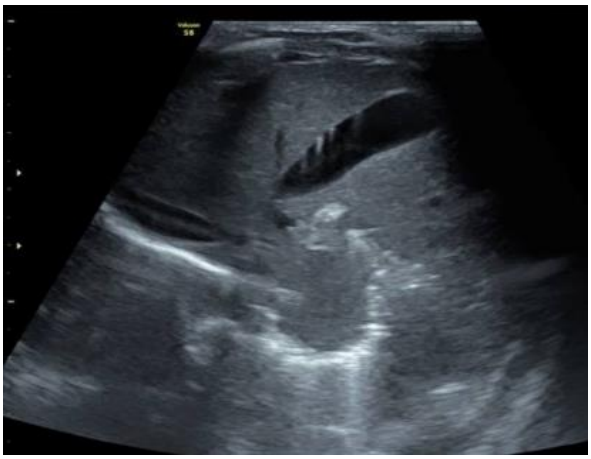

Fig. 2: On postnatal ultrasound after 4 days of deliver-hyperechoic foci were confirmed in gall bladder wall

DISCUSSION

The discovery of foetal adenomyomatosis during a third-trimester ultrasound examination is uncommon and typically incidental. Due to technical advancement and growing use of ultrasonography during prenatal checks, its incidence of diagnosis has increased in recent years [1]. From the embryonic foregut, the foetal gallbladder begins to mature about the fourth week of pregnancy. The foetal gallbladder, which often has an oval or teardrop form, plays no active part in the development of the embryonic gastrointestinal system. Early in the second trimester, the foetal gallbladder can be seen on ultrasound as an elliptical hypoechoic or anechogenic body to the right of the intrahepatic umbilical vein [2]. An acquired, hyperplastic gallbladder lesion known as adenomyomatosis is characterised by intramural diverticula, thickening of the muscle wall, and mucosal overgrowth. Rokitansky-Aschoff sinuses are invaginations and diverticula that penetrate a thicker muscle layer as a result of this. These sinuses become clogged with crystallised cholesterol precipitated from bile [3]. Mural thickening linked to the more distinct V-shaped comet-tail reverberation artefact is the typical sonographic appearance.

Although several theories have been put out, the precise pathophysiology of gallbladder adenomyomatosis is still unknown. According to one theory, disturbance of gallbladder function may produce changes in intracystic pressure (perhaps brought on by aberrant muscular contraction), which may then cause cell proliferation in the gallbladder mucosa and hyperplasia of the muscle layer. Rokitansky-Aschoff sinuses might then develop as a result of the epithelial layer invading the muscular layer. This is also evident on histology, which typically displays mucosal outpouching through the muscle layer and epithelial hyperplasia [4]. Generalized, regional, segmental, and annular patterns of gallbladder adenomyomatosis are the four primary types. The gallbladder thickens sporadically in the generalised (diffuse) pattern. The fundus typically is affected by the localised pattern, whereas the bigger sections of the gallbladder are frequently affected by the segmental kind. The type of adenomyomatosis in our case was segmental type. Radiological imaging is frequently used to make a formal diagnosis, and ultrasonography is the preferred imaging technique. Gallbladder wall thickening is frequently found on ultrasonography. Additionally, due to the reverberation of cholesterol crystal signals in RAS, a "comet-tail" discovery might be visible. These cholesterol crystals operate as highly reflecting surfaces and produce posterior reverberation artefacts on grey-scale USG, or "comet-tail" artefacts. It can be identified by a prominent hyperechoic focus at the GB wall and an acoustic augmentation of the posterior inverted triangle that eventually loses strength and thickness. The "comet-tail" and "twinkling" artefacts on ultrasound, the "pearl-necklace sign" on MRI, and the "rosary sign" on computed tomography are differentiating characteristics. Serial ultrasonography surveillance of asymptomatic patients is frequently advised. The time it takes for gallbladder adenomyomatosis to resolve, however, is not well known. All of the symptomatic patients in the reported paediatric cases had cholecystectomy, which led to the symptoms' remission (CT) [5]. In contrast to cases of gallstones in children and adults, when surgery is frequently necessary and spontaneous clearance is uncommon, FC appears to be self-limiting. It seems appropriate to have a cautious mindset. It is advised to get an ultrasound.

CONCLUSION

Fetal adenomyomatosis is rare and is an incidental finding during 3rd trimester scan. The muscular layer of the gall bladder hyperplasises in adenomyomatosis, and Rokitansky Ashoff sinuses arise. The comet tail phenomenon on ultrasonography is caused by precipitated cholesterol crystals getting trapped in these sinuses and reverberating their signals.

Radiologists should know about the differentials of comet tail artifacts and should raise the suspicion of adenomyomatosis. There is no established explanation explaining the origins of foetal adenomyomatosis. It is typically not advised to seek therapy. It is a benign, self-limiting condition. It is advised to follow up clinically and by ultrasonography because of the spontaneous resolution.

Teaching Points

Fetal adenomyomatosis is a benign and generally no treatment is needed. Follow up ultrasound is done and the condition resolves on its own. Surgery is required when patient is symptomatic.

MCQs

Artifact in adenomyomatosis:

1. Comet tail artefact.
2. Mirror artifacts.
3. Twinkling artifacts.
4. Ring down artefact.

Imaging modality of choice for adenomyomatosis:

1. Magnetic resonance imaging.
2. Ultrasonography.
3. Computed tomography.
4. Conventional radiography.

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