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Case Report

Ultrasound findings of distal umbilical artery calcification: A case report ☆☆☆

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ABSTRACT

Umbilical artery calcification is a rare finding with only a small number of cases reported on radiographs. To date, no cases have been described on ultrasound. Reported cases were limited to the horizontal segment of the medial umbilical ligament. This case report presents a unique case of ultrasound findings of bilateral umbilical artery calcification within the vertical (distal) segment of the medial umbilical ligament.

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Introduction

Obliteration of the umbilical arteries occurs shortly after birth. Dystrophic calcifications may occur within the remnant of these arteries in the medial umbilical ligament [1,2]. This is a rare occurrence and only a few papers have reported these findings. 10 cases have been reported and were found incidentally on radiographs in healthy children within the horizontal segment of the medial umbilical ligament [2]. It has been suggested that calcification of the umbilical artery may occur in any portion of the umbilical artery [1]. We present a case of umbilical artery calcification within the vertical (distal) segment of the medial umbilical ligament on ultrasound imaging.

Case report

A 3-month-old male presented to the pediatric emergency department with a 3-day history of low-grade fever with periumbilical erythema and tenderness. Patient had no significant past medical history, was born full term without complications. On physical exam, there was periumbilical erythema, and induration.

Ultrasound imaging of the region demonstrated a heterogeneous hypoechoic lesion of the periumbilical region extending deep into the abdominal wall (Fig. 1). Two tubular echogenic structures were seen within the hypoechoic lesion deep of the abdominal rectus muscles which also demonstrated twinkling artifact and subtle posterior acoustic

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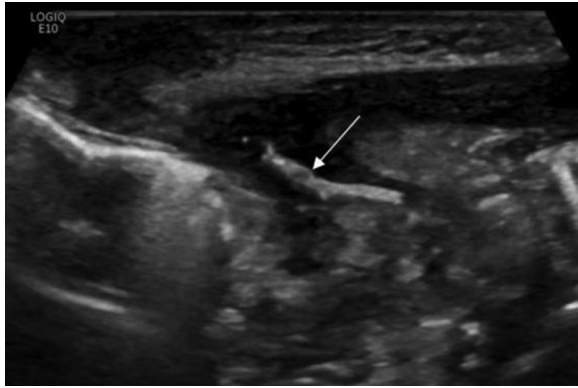


Fig. 1 – US of Periumbilical region: On oblique sagittal view, a superficial heterogeneous hypoechoic lesion and/or edematous soft tissue extending deep into the abdominal wall. Noted is a tubular echogenic structure (arrow) deep to the abdominal wall.

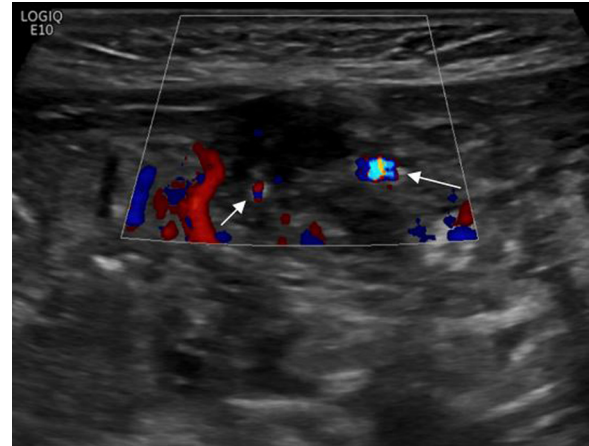


Fig. 3 – Transverse 100 US images with color doppler illustrates twinkling artifact (arrows) related to the distal umbilical arteries/medial umbilical ligament which is suggestive of calcification.

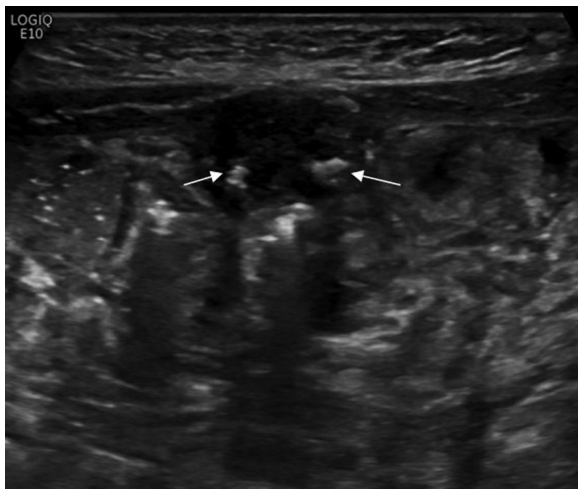


Fig. 2 – Transverse US images demonstrates bilateral echogenic distal umbilical arteries/medial umbilical ligament (arrows) with posterior acoustic shadowing within the edematous soft tissue.

shadowing (Figs. 2 and 3). Color flow Doppler did not reveal any vascular flow within the tubular structures, but twinkling artifact was seen. These findings were suggestive of a periumbilical abscess, with calcified distal umbilical arteries/medial umbilical ligaments. The proximal portions of the tubular structures were isoechoic and not calcified.

The patient was admitted and later discharged with a course of antibiotics and follow up. On follow up ultrasound imaging 10 days later (at 4 months of age) there was an interval decrease in size of the fluid collection and inflammatory edema around the umbilicus. The hyperechoic and/or calcified umbilical arteries were redemonstrated.

Discussion

Spontaneous obliteration of distal umbilical arteries and vein occurs after birth and persists as fibrous cords in the medial umbilical ligament and ligamentum teres respectively. The patent proximal portion of the umbilical artery forms the superior vesical artery. It has been reported that during obliteration umbilical arteries may undergo dystrophic calcification [1]. Umbilical artery calcification is a rare entity with a total of 10 cases described in literature [2]. To our knowledge all of the reported radiologic cases were demonstrated on radiographs and discovered incidentally. Echogenic mucosal lines can also be seen in the unobliterated distal umbilical arteries or medial umbilical ligament in neonates [3]. However, the presence of posterior acoustic shadowing, and twinkling artifact in our case favor calcification of distal umbilical arteries.

Currarino and Weinberg have reported umbilical artery calcification of the horizontal segment of the umbilical ligament. In contrast, our case is an example of umbilical artery calcification within the vertical (distal) segment of the medial umbilical ligament and is the first documented case with sonographic imaging. This raises the possibility of calcification occurring in any portion of the medial umbilical ligament. It has been hypothesized that calcification of the medial umbilical ligaments may occur as normal physiology and during growth related stretching, disruption and fragmentation results in nonvisualization on radiographs [2]. We think future studies are needed to study the ultrasound appearance and/or temporal evolution of distal segment of the umbilical artery/medial umbilical ligament.

It is uncertain whether the dystrophic calcifications in our case were a result of pathology or physiological. Of note, a number of cases of umbilical artery calcification were found on pathologic examination of premature stillbirth, and intrauterine distress, raising the possibility of association with pathology [4]. A relationship of chronic omphalitis is a possible

etiology for dystrophic calcification of the umbilical arteries in our patient, however could also be incidental.

Conclusion

The calcification of the distal umbilical artery/medial umbilical ligament may be a result of natural obliteration or may represent dystrophic calcification and is exceptionally uncommon. Future studies are needed to study the temporal evolution of distal umbilical artery, on ultrasound.

Patient consent

Consent has been obtained to publish the details, information and imaging of the case detailed in the article “Ultrasound findings of distal umbilical artery calcification: A case report.”

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