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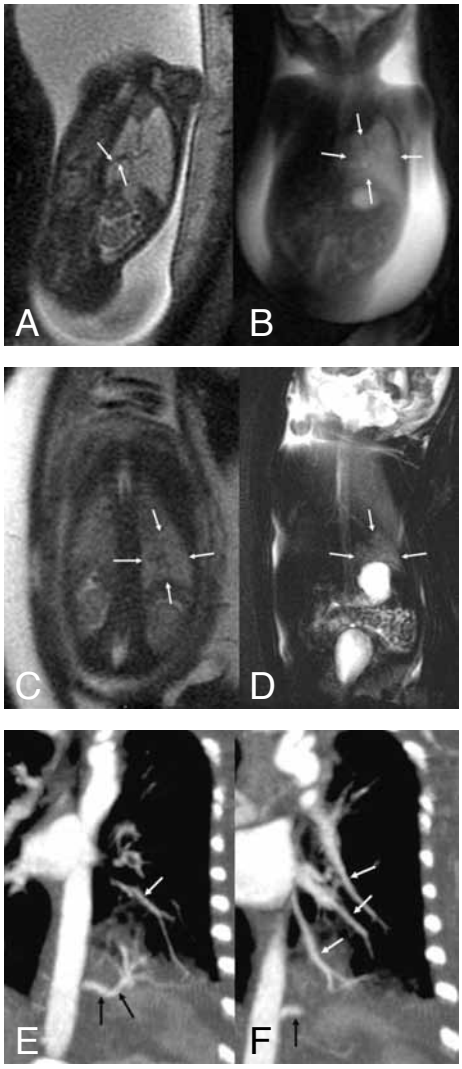
IMAGES IN CLINICAL RADIOLOGY



Spontaneous regression of pulmonary sequestration: prenatal and postnatal imaging findings

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A 28-year-old woman at 24 weeks gestation was referred to our hospital for evaluation of a fetal lung mass. The differential diagnosis initially included pulmonary sequestration (PS) and microcystic congenital cystic adenomatoid malformation (CCAM), the latter because 2D color Doppler ultrasonography (US) showed no systemic artery feeding into the fetal lung lesion. At 25 weeks' gestation, a complementary magnetic resonance imaging (MRI) scan showed a hyperintense left-sided triangular mass with a systemic feeding artery arising from the descending thoracic aorta (Fig. A, arrows), thereby indicating fetal PS. In a thick-slab T2-weighted image, the lesion showed hyperintensity in the left lower thorax (Fig. B, arrows). Follow-up MRI was performed 10 weeks later, and it showed partial regression of the sequestered lung with decreased, inhomogeneous signal intensity (Fig. C and D, arrows). Multidetector computed tomography (MDCT) angiography was arranged for preoperative evaluation on postnatal day 3, and it showed partial regression of the left lower lung PS as compared to prenatal MRI performed at 35 weeks' gestation, a systemic feeding artery arising from the descending thoracic aorta (Fig. E and F, black arrows), and venous drainage into pulmonary veins (Fig. E and F, white arrows). The final diagnosis of PS was confirmed by surgery.

Comment

PS is a congenital malformation consisting of a nonfunctioning lung tissue. This tissue lacks normal communication with the bronchial system, and it is supplied by aberrant vessels arising from the descending thoracic aorta or other systemic arteries and drained into the pulmonary vein, inferior vena cava, azygos system, or other systemic drainage. Intralobar PS is confined within the normal pulmonary visceral pleura and has been suggested to be an acquired lesion that is caused by recurrent infections. Extralobar PS is characterized by a complete separation of the embryonic tissue that is enclosed in its own pleura, and it is universally accepted to be a congenital anomaly.

Prenatally, US is the primary imaging modality for diagnosis and differentiation of PS from CCAM by revealing the feeding artery arising from the aorta to the fetal lung mass. MRI can be a useful complementary tool to US in differentiating fetal PS by visualizing the systemic feeding artery (1, 2). The characteristic MRI pattern of fetal PS during the second trimester includes a well-defined, triangular, homogeneous, hyperintense mass with intensity more than the normal lung but lower than the amniotic fluid, with the feeding artery and possible drainage veins. Many studies indicate that PS may regress either partially or completely, or stabilize in size *in utero*. Partially regressed PS tends to show decreased, inhomogeneous signal intensity, while nearly complete regressed PS tends to show a very small-sized mass; thick-slab T2-weighted images are useful for detection of these conditions because of the high water content of the associated lesions (2).

Postnatally, various imaging techniques such as conventional angiography, MRI, color Doppler US, and MDCT angiography have been reported to aid the visualization of the abnormal feeding artery of PS. Furthermore, MDCT angiography with 3D rendering images may help in clearly identifying the feeding arteries and draining veins, and thereby could be a potential first-line examination for the preoperative planning or regular follow-up of PS (3).

References

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