

Letters to the Editor

Diaphragmatic Undulation Mimicking an Intra-thoracic Mass in a Newborn

Dear Editor,

Diaphragmatic embryo-genesis is between gestational weeks 4 and 12. Transverse septum, pleuroperitoneal membranes, mesentery of the esophagus, thoracic intercostal muscle groups gives rise to anterior central tendon, dorsolateral portions, dorsal crus and the muscular parts of the diaphragm respectively. Delays or changes occurring during this development lead to congenital diaphragmatic herniation or eventration.¹ Diaphragmatic undulation is a mild focal eventration formed by incomplete muscle development in one hemi-diaphragm without any muscle damage. It usually includes the liver and is located in the front, right side. On X-ray investigations, it has a shadow-like appearance in the right cardio-phrenic angle and must be differentiated from Morgagni hernias, lipomas, pericardial cysts and fat pads.

A 13-day-old baby was referred to our emergency department for a suspected mass lesion in the right lung detected in chest X-rays while investigating runny nose and restlessness. Physical examination revealed no pathological findings other than nasal congestion. No sign of respiratory distress and cyanosis was detected, thus, respiratory pathologies are excluded from differential diagnosis. Acute phase reactant levels remained low and biochemical studies showed nothing out of ordinary. Initially, plain chest radiographs were re-evaluated. A round shaped, smooth-edged increased density of 1*2.2 centimeters was seen in the right lung base, adjacent to the diaphragm. (Figure 1) On abdominal USG, no diaphragm related pathology was detected. An abdominal CT was taken to distinguish abdominal masses and revealed the diaphragmatic undulation (Figure 2). Patient had no respiratory distress, no feeding difficulty and vital signs were stable so she was discharged from the hospital. On the follow-up, one week later after the discharge, physical examination and laboratory investigations still revealed no pathological findings.

Eventration of the diaphragm is the focal thinning of a diaphragmatic muscle that causes elevation of the entire hemi-diaphragm. Focal eventration usually occurs in the

right anterolateral side and mostly affects the elder population. Physical examination findings may vary widely and it can be associated with cleft palate, hemi-vertebrae, congenital heart disease, renal ectopia, hypoplastic aorta and situs inversus.^{2,3} Diaphragmatic diseases are usually revealed by chest X-rays. Ultrasonography, CT and MRI are also effective methods to diagnose and classify diaphragmatic malfunction either as paralysis or eventration. They can specifically be used to differentiate small or multiple hernias from other diaphragmatic and pleural diseases in case of a suspected mass.^{1,4} In our patient, a mass lesion in the right lung was detected in chest X-rays (Figure 1) and diagnosis was confirmed by ultrasonography and a computed tomography scan (Figure 2). Diaphragmatic plication is the treatment of choice in symptomatic patients. The operation is safe and simple, and has dramatic effect on patient's symptoms.^{1,5} Our case was asymptomatic so surgical intervention was not necessary.

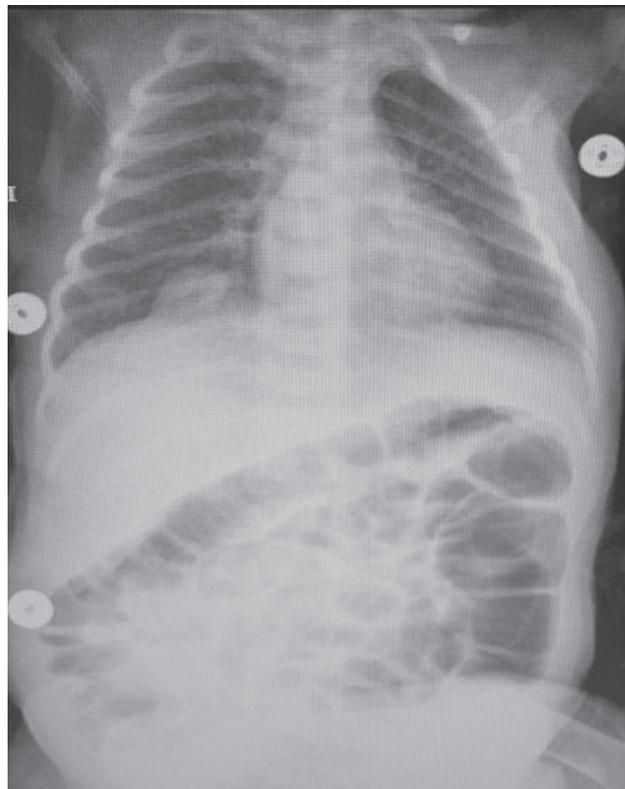


Figure 1 A-P chest X-rays.



Figure 2 Computed tomography scans.

In conclusion, in a newborn with a detected mass lesion on radiographic investigations and consistent physical examination findings, differential diagnosis should include focal eventration of the diaphragm as well as pleural and diaphragmatic congenital pathologies, masses and tumours.

References

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