17th World Congress in Fetal Medicine

Ultrasonographic assessment of mediastinal shift angle in isolated left congenital diaphragmatic hernia for the prediction of postnatal survival

Romiti A, Viggiano M, Valfrè L, Conforti A, Aite L, Ravà L, Ciofi Degli Atti M, Bagolan P, Caforio L
Bambino Gesù Children's Hospital Clinical and Research Institute, Rome, Italy

Objective

To quantify mediastinal shift in isolated congenital diaphragmatic hernia (CDH), by the introduction of a new ultrasonographic (US) marker, defined as mediastinal shift angle (MSA) and to evaluate its ability in predicting postnatal survival.

Methods

Twentyfour consecutive fetuses from singleton pregnancies with isolated left-sided CDH were included in the study group and then subdivided in group A (n. 16 survivors) and group B (n. 8 no survivors). Study group was matched with a control group of 95 fetuses from singleton pregnancies free from structural and/or chromosomal anomalies. On the same US stored images commonly used for lung-to-head ratio (LHR) measurement, a landmark line was drawn from a point on the posterior face of the vertebral body, splitting it into two equal parts, to the mid posterior surface of the sternum. Another landmark line was then traced from the same point of the vertebral body to touch tangentially the lateral wall of the right atrium. The angle between these two lines was used to quantify mediastinal shift and called “mediastinal shift angle” (MSA).

Results

Median MSA was significantly different between group A (34. 3° range 29. 3°– 45. 9°) and group B (42. 7° range 34. 1°–58. 9°) ($p<0.001$) and between study group as a whole and the control group (19° range 13. 8°–25. 9°) ($p<0.001$). Statistical analysis confirmed an inverse correlation between MSA values and survival ($p=0.004$). The best cut-off value for MSA was 43. 7° which demonstrated the highest discriminatory power (sensitivity 63%; specificity 93. 75%). In fetuses with isolated CDH, mediastinal shift may be quantified using mediastinal shift angle (MSA) and this US marker seems to reliably predict survival.

Conclusion

In conclusion, our results show that, similarly to the widely accepted and used US prenatal prognostic indicators (LHR and O/E LHR), the mediastinal shift angle (MSA) has a good correlation with survival in isolated left sided CDH.