LHR, o/e LHR and QLI in congenital diaphragmatic hernia

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Objective

Lung – to – Head Ratio (LHR) and observed to expected LHR (o/e LHR) are two widespread indexes to predict neonatal outcome in foetuses with congenital diaphragmatic hernia (CDH). They are routinely used to select which of these foetuses may benefit from prenatal surgery. Both ratios are gestation-dependent, though, which represents an inconvenience for the surveillance after surgery. To overcome this problem, the Quantitative Lung Index (QLI) was proposed as a parameter that can be used for both sides and stays constant throughout gestation. Our objective was to study the performance of QLI to select the candidates for surgery among foetuses with CDH.

Methods

Descriptive retrospective study of foetuses with isolated CDH, referred to our centre as candidates for prenatal balloon placement (FETO). The decision to undergo surgery or expectant management had been made on the basis of LHR and o/e LHR. We calculated the QLI with the measurements already available of the lung area, contralateral to the hernia, and the cephalic circumference. We then assessed different cut-off points for QLI and chose the one that optimized the area under the curve (AUC) to predict surgery or expectant management.

Results

From January 2009 to February 2015 we assessed 33 foetuses with CDH. The median GA was 26 weeks (20-39). Five foetuses were more than 32 weeks at the time of evaluation and therefore excluded for prenatal surgery. Among the 28 remaining cases, 5 foetuses had a right CDH and 23 had a left CDH. All foetuses undergoing FETO had LHR below 1 and o/e LHR ≤45%. When assessing the QLI as a diagnostic test for the prediction of FETO, the area under the curve (AUC) obtained was 92. 3% (81. 6-100. 0%) for the whole sample, for a cut-off value of 0. 57. When excluding the foetuses older than 32 weeks, the AUC was 100% for a cut-off value of 0. 60. There were 2 neonatal deaths, both in the group under expectant management.

Conclusion

In our retrospective study, the QLI accurately predicted the cases undergoing FETO for a cut-off value of 0. 60, which coincides with the cut-off proposed by Quintero for prediction of adverse outcomes. Further studies are needed to confirm this index as a valid tool for the identification of the best candidates for surgery among foetuses with CDH.