Prediction of neonatal respiratory morbidity assessed by quantitative ultrasound lung texture analysis in twin pregnancies

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Objective
To evaluate the performance of quantitative ultrasound of the fetal lung texture analysis to predict neonatal respiratory morbidity in twin pregnancies.

Methods
This was an ambispective study involving consecutive cases of twin pregnancies. Prospective data was collected from January 2018 to February 2020 and retrospective data was identified from a database designed for a multicenter study (recruited from June 2011 to December 2014). Eligible cases included twin pregnancies between 27.0-38.6 weeks of gestation and for which an ultrasound image of the fetal thorax was obtained within 48 hours of delivery. The primary outcome of the study was neonatal respiratory morbidity (NRM) defined as the occurrence of either transient tachypnea of the newborn (TTN) or respiratory distress syndrome (RDS).

Results
We included 166 fetuses (166 images), stratified in two groups, from 25.0-33.6 weeks [35/166 (21.1%)] and 34.0-38.6 [131/166 (78.9%)] weeks. Neonatal respiratory morbidity occurred in 12.7% (21/166) of cases and it was predicted by quantusFLM analysis with a sensitivity, specificity, positive predicted value, negative predicted value of 42.9% (9/21), 95.9% (139/145), 60% (9/15), and 92.1% (139/151), respectively.

Conclusion
The performance of quantusFLM to predict NRM in twin pregnancies provides a non-invasive tool that could be useful in the clinical decision-making process of this high-risk population, particularly below 34 weeks of gestation.