

USING DEEP-LEARNING IN FETAL ULTRASOUND ANALYSIS FOR DIAGNOSIS OF CYSTIC HYGROMA IN THE FIRST TRIMESTER



WHY

AI has many potential uses in ultrasonography, but its uptake in obstetrical medicine has been slow. Cystic hygroma – a unique fetal anomaly – is an ideal condition to investigate the feasibility of using AI-related methods to help in the interpretation of fetal ultrasound images.



OBJECTIVE

Using deep-learning in fetal ultrasound analysis for diagnosis of cystic hygroma in the first trimester



STUDY DESIGN Retrospective study



POPULATION & SETTING

Location(s): Ontario, Canada
Date(s): March 2014 - March 2021

N = 289 sagittal fetal ultrasound images at 11- to 14-weeks gestation,
129 cystic hygroma cases, 160 normal nuchal translucency controls



RESULTS

- Overall **mean accuracy** was **93%**
- The **sensitivity** was **92%** and the **specificity** was **94%**



SUMMARY

In this proof-of-concept study, we demonstrate the potential for deep-learning to support early and reliable identification of cystic hygroma from first trimester ultrasound scans.



NEXT STEPS

With further development, testing and external validation, deep learning **may be applied to other fetal anomalies** typically identified by ultrasonography

