European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry

COCIR 2019 Annual General Assembly
Open Session
Friday 12 April 2019, Brussels, Belgium

Artificial Intelligence in Clinical practice – Panel 1
An Ultrasound AI use case:
Reliable, accurate and reproducible fetal brain measurements

Belén Soto Bodí

Sr. Dr. AI Strategic Data Engagement Leader EMEA
GE Healthcare

Why AI?

- Sonographic evaluation of fetal brain aiming at early detection of abnormalities during pregnancy is very **operator-dependent**

- The ISUOG recommendation requires obtaining three planes:
  - ✓ Trans Thalamic Plane (TTP)
  - ✓ Trans Ventricular Plane (TVP)
  - ✓ Trans Cerebellar Plan (TCP)

  …and execute 5 measurments on this plane

- Today most users acquire 2D planes and **manually** perform the measurments

Would AI help with a less operator dependent method of evaluating brain structures and biometry, so the diagnostic process would be more reliable?

SonoCNS
An AI powered function in the Ultrasound equipment

- Offers a different workflow:
  - ✓ User acquires a 3D volume of foetal brain
  - ✓ The ultrasound system will propose the three required planes
  - ✓ Once set, at the press of a button, the 5 required measurements are performed

- **Improved Workflow**
- **Accurate Measurements**
- **Reproducible Results**
- **Reliable, less operator dependent**
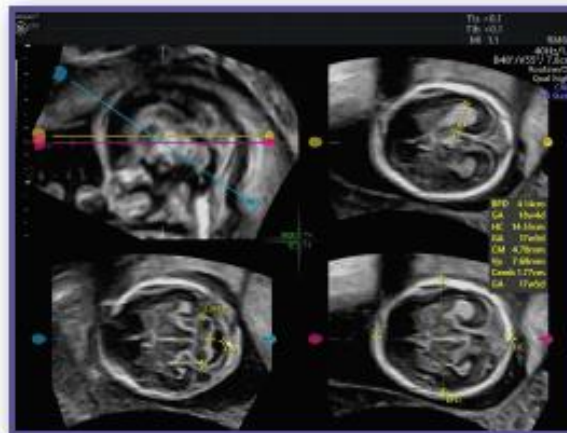
Results

The automated measurements were within acceptable range when comparing case-by-case and measurement-by-measurement. The largest discrepancy (not more than 9%) was seen in the measurement of the posterior ventricle. The application was unable to yield measurements in two cases due to inadequate volumes from suboptimal views obtained in high BMI patients; this reinforces the well-known fact that 3D volumes are only as good as the 2D images on which they are based.