

Objectives

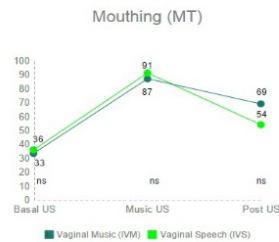
Fetuses at 16–39 weeks of gestation respond to intravaginally emitted music with repetitive speech movements, that can be evaluated by transabdominal ultrasound.

The aim of this study was to analyze by 3D/4D ultrasound, fetal speech movements in response to an acoustic stimulus emitted vaginally, comparing intravaginal monophonic music (IVM) and intravaginal polyphonic music (IVP).

Methods

Sixty-two normal pregnancies between 16 and 38 weeks of gestation were randomized to 3D/4D ultrasound with: IVM with a specially designed device emitting flute monody at 53.7 dB, and IVP emitting orchestra polyphony at 56.2 dB with the same device.

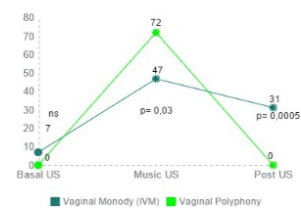
Fetal speech movements, including mouthing (MT) and tongue expulsion (TE), were quantified at baseline, during stimulation, and for 5 minutes after stimulation was discontinued.



Results

1. At baseline study, there were no significant differences in MT (33% in IVM vs 36% in IVP) and TE (7% in IVM vs 0% in IVP).
2. IVP elicited MT and TE in 91% and 72% of fetuses respectively, with significant differences when compared with IVM only for TE (47%, $p = 0.03$).
3. After stimulation, there were only significant differences between IVM and IVP for TE (31% for IVM vs 0% for IVP, $p = 0.0005$), and not for MT (69% for IVM vs 54% for IVP).

Tongue expulsion (TE)



Conclusions

Fetuses over 16 weeks of gestation respond with different speech movement patterns when we apply IVM and IVP there is a similar MT response but with an earlier and shorter TE response for polyphonic music.

Our findings suggest that fetal neural pathways participating in the auditory-motor system might be the same when de fetus responds to IVM and IVP, but that its activation might change depending on the music applied.