

Summary

Use of the prenatal MRI in the orofacial cleft diagnostics

Aim:

To evaluate the accuracy and credibility of MRI in the assessment of the fetal facial cleft lip defects severity using interobserver agreement between several specialists.

Material and method:

Our study consists of 23 MRI examinations of fetuses in gestation age before 24 week with differently severe lip clefts, which was detected by ultrasound as well as other 17 examinations without face anomaly (40 cases in total). Datasets were anonymized and analyzed by 3 radiologists and statistical analysis was performed. According to standardised protocol presence of cleft and degree of severity was evaluated - alveolar ridge involvement, continuation or noncontinuation to the palate. The examinations were performed by Siemens Magnetom Symphony Maestro Class 1,5T with use of array coils.

Results:

Result of MRI was in 20 cases (87 %) in agreement with clinical findings. We found 3 discrepancies (13 %), mainly due to graphically limited examination caused by fetal movements.

The best degree of interpretative agreement was in the evaluation of alveolar ridge involvement – 94 % (generalized kappa 0,894, SE 0,106), for isolated cleft lip it was 90 % (generalized kappa 0,848, SE 0,083) and for defect of palate 86 % (generalized kappa 0,711, SE 0,119).

The most contributory plane of view for the cleft lip was the transversal and a little less the coronal plane. The alveolar ridge defect was depicted the best on the transversal plane. Surprisingly the most useful plane for the detection of the cleft palate appeared the coronal plane. The sagittal plane was the worst plane among the readers.

Conclusion:

MRI examination could be successfully used for more accurate imaging of cheilognathopalatoschisis of fetuses within the 24 gestation week of gravidity. The best credibility is for alveolar ridge defect detection, and this information is clinically very valuable. This method appeared to be highly accurate and robust.