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Abstract Title

Prenatal alcohol exposure induced dental malformations of the upper jaw as a novel facial feature in children diagnosed with FASD

Background

Fetal Alcohol Spectrum Disorder (FASD) is one of the most common neurodevelopmental disorders in the world. A new FASD phenotype we reported in our FASD mouse model was maxillary malocclusions – skeletal and/or dental malformations of the upper jaw causing a miss alignment of the teeth or crossbite.

Objective

Maxillary malocclusions are an unrecognized and novel facial feature of PAE that we expect are found in children with FASD.

Methods

To test our hypothesis, we performed a retrospective chart review (REB approval, University of Manitoba – 2024). We were able to assess 15 FASD patients and 15 age matched control patients with similar demographics. The cohort is comprised of 3 FAS, 1 pFAS, 11 FASD diagnosed patients. Pre-orthodontics dental study models, panoramic radiographs, and lateral cephalograms were gathered from each patient and utilized for the study.

Results

The study shows that individuals with FASD have a skeletal class II malocclusion (ANB: 6.82 (F) vs 3.96 (C), p-value= 0.0143/ APDI: 77.59 (F) vs 83.31(C), p-value= 0.0349). Individuals with FASD have a retruded mandible (Bjorn Sum: 393.99 (F) vs 389.70 (C), p-value= 0.0236). The Skeletal Class II malocclusions are due to a protruding Maxilla (upper jaw) in conjunction with an also retruding Mandible (lower jaw), as we have similarly seen in our Gsc:Cyp26A1 mouse model. Individuals with FASD have a protruded upper and lower lip (Upper Lip to E-Plane: 1.87 (F) vs -0.75 (C), p-value= 0.0254/ Lower Lip to E-Plane: 3.66 (F) vs 0.07(C), p-value= 0.0078).

Conclusion

This is the first known study to assess skeletal and dental malformations across the FASD spectrum.

Taken together, this research suggests that FASD can be clinically assessed using standard dental x-rays at an age as early as 6 years old, to provide an earlier FASD diagnosis.

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