Anodontia Detected by Prenatal Sonography: A Case Report

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Abstract

Anodontia is a rare orofacial complex developmental malformation. In contrast to normal tooth germ with round hypo echogenic structure arranged in an arch-like manner in alveolar bone, anodontia shows an arch-like hyper echogenic structure without any dental alveoli. Prenatal ultrasound is a reliable method for detecting anodontia in early gestational age.

Keywords: Anodontia, prenatal sonography, tooth germ

Introduction

Hypodontia or tooth agenesis is the most frequent developmental malformation of the orofacial complex [1,2], and its prevalence varies from 0.03% to 10.1% among various populations [3]. Anodontia is defined as the condition of complete absence of teeth either in primary dentition and/or in permanent dentition and is rarer than hypodontia (absence of one to six teeth) or oligodontia (absence of more than six teeth) [4-8]. To date, only few studies have evaluated the usefulness and importance of prenatal sonography screening in human tooth germs [9-12].

Case Presentation

A 30-year-old woman (Gestation 3, Parity 1, Abortion 1, Live 1; G3P1A1L1) was referred to our hospital in her 24th week of pregnancy. She did not use any prescribed medications, tobacco, alcohol, or illicit drugs. Her pregnancy was spontaneous. She had a 2-year-old baby girl with anodontia. Neither she nor her husband had a family member with a history of anodontia or other congenital anomalies.

Prenatal sonography was conducted at 24 weeks (Voluson E8; GE Healthcare) of gestation. The ultrasound transverse and sagittal section schematic diagram of anatomical structure of the maxilla and mandible was illustrated in figure 1A and figure 1B. Her sonographic results revealed transverse sections of maxilla (Figure 1C) and mandible (Figure 1D) of fetus without any dental alveoli, represented as an arch-like hyper echogenic structures and highlighted by red arrows. The sagittal sections (Figure 1G) of maxilla and mandible showed two short hyper echogenic structures without dental alveoli highlighted by red arrows. In healthy control, the transverse sections of maxilla (Figure 1E) and mandible (Figure 1F) showed a normal number of tooth germs,
represented by small round hypo echogenic structures arranged in an arch-like manner in alveolar bone and highlighted by green arrows. The sagittal sections of maxilla and mandible (Figure 1H) showed two short hyper echogenic structures with small round hypo echogenic structures highlighted by green arrows. Other prenatal sonographic results were unremarkable. The fetus was born at a gestational age of 41 weeks. The fetus weighed 2.86 kg and had 1 min neonate Apgar score of 10. The baby girl is 8 months old now and has a normal intelligence. However, she refused to undergo gene tests or provide the photos of her children’s teeth.

Figure 1: Prenatal tooth germ sonography in the 24th week of gestation. The ultrasound transverse (A) and sagittal (B) section schematic diagram of anatomical structure of the maxilla and mandible. Transverse sections of maxilla (C) and mandible (D), and its sagittal sections (G) of fetus without any dental alveoli (an arch-like hyper echogenic structure, highlighted by red arrows). Transversely sections of maxilla (E) and mandible (F) and its sagittal sections (H) of a healthy control fetus (small round hypo echogenic structures arranged in an arch-like fashion, highlighted by green arrows).

Discussion and Conclusions

Human odontogenesis and maxillary/mandibular bone formation starts 30-40 days and 48-51 days following conception, respectively. Fetal tooth buds are discernible from the 16th week of fetal life, becoming more easily observable as prenatal life progresses [13]. Although anodontia is regarded as a genuine ectodermal impairment and a total of 126 known syndromes have anodontia as a clinical sign, in this case, the girl with anodontia has no other malformation of other organs formed by the ectoderm (extremities, iris and skin).

These results indicate that prenatal ultrasound is a reliable method for detecting of anodontia at an early gestational age. It is important that fetal dental germs are included in the routine examination of all professionals for early diagnosis. Further studies with larger samples are needed to confirm these results.

Declarations

Ethics approval and consent to participate

The case report protocol was approved by the local institutional review board, and informed consent for the study was obtained from the patient.
Consent for publication

Written informed consent for publication was obtained from all participants.

Availability of data and material

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no conflicts of interest.

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Authors’ contributions

Jian Sun and Zhi Yang provided the data, Haixian Zhang wrote the paper.

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References


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