Premature closure of the cranial sutures - the new de novo mutation

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Objective
To report a case of de novo mutation causing Pfeiffer syndrome.

Methods
A 34 year-old pregnant woman, in her first pregnancy, at 26 weeks gestation had a control ultrasound scan revealing abnormal shape fetal skull. Previous course of pregnancy was uncomplicated. Results of laboratory evaluation were normal. Family history did not include any genetic defects. Ultrasound evaluation at 27 weeks of gestation revealed abnormal shape of the neurocranium and of the fetal profile. Other anatomical structures, including the skeletal system (no syndactyly), were normal. Biometry was suitable to gestational age. Amniocentesis was conducted at 28 weeks in order to evaluate karyotype and collect fetal DNA for Apert syndrome diagnosis.

Results
Karyotype result was 46,XX. Due to suspicion of a syndrome belonging to the craniosynostosis group (i.a. Crouzon, Apert, Pfeiffer syndromes), the amniocytes were transferred to the molecular evaluation. DNA evaluation revealed presence of mutation g. 81558_81608 del 59 ins 57 (g. 81539_81587) ins AC at the border of exon 9 and exon 10 of the FGFR2 gene. Evaluations in both parents were also performed, but no aforementioned mutations were established. No such lesion has been reported for Crouzon syndrome so far. In this situation, due to compatibility of clinical symptoms (susicion of craniosynostosis in ultrasound evaluation), it should be assumed that mutation established in the fetus causes premature ossification of the cranial sutures. A cesarean section was performed at 39 week at the specialized clinical center. A live fetus was weighting 3630 g with Apgar score of 10. In the neonatology department, prenatal diagnosis was confirmed. Currently, the child is 2-year-old. She underwent four neurosurgical procedures. Mental and physical development is normal.

Conclusion
At least 26 mutations were established in patients with Pfeiffer syndrome. This syndrome manifests with the craniosynostosis, wide, abnormally positioned thumbs and big toes, and partial syndactyly. Sometimes, hydrocephalus, exophthalmus, ankylosis of the elbow joints, abnormalities within internal organs and delayed development may occur. Mutation detected in described case is de novo mutation. No case of this type of mutation at the border of exon 9 and exon 10 of the FGFR2 gene has been reported so far, so it may be confidently said that the presented case is extremely interesting and it may provide a great deal of new information in the field of perinatology and clinical genetics.