

Euro Pediatrics 2018: The genetic background of human neural tube development in the aspect of prenatal diagnosis - Krzysztof Piotrowski - Pomeranian Medical University

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Journey of thousand miles starts with a single step likewise journey of life starts with infancy. Pediatric dentists varies from general family dentists in that they've had more training specifically in treating children. Would you take your child to a normal doctor instead of a pediatrician? Chances are probably not. When it comes to your child's oral health, the same concept applies. Your child should show to a pediatric dentist regularly in order to get the proper and health care that their growing smile needs. Taking children to a pediatric dentist is a vital and we'd love to explain the importance of choosing a dentist that specializes in pediatric dentistry! Pediatric dentists typically have an extra two years of training in pediatrics after completing four years of dental school. To start, it is very important to identify what it means to specialize in pediatric dentistry. Mainly like a pediatrician focuses specifically on your rising child's overall health and development, a pediatric dentist focuses on your child's developing smile, providing care for infants and children through adolescence, including those with unique health needs.

This means they are essentially an expert on treating and providing pediatric dentistry. They are very experienced and familiar with common tooth concerns, diseases, and development that are both typical and uncommon in children, and can help you as a parent watch out for potential problems. Think of it this way: a pediatric dentist sees countless child patients on a weekly basis. We know that dentist can be intimidating to children. Pediatric dentist is well known used to these fears and knows how to help your child feel at ease. Several pediatric dentist offices are kid-friendly, with toys in the waiting room and a colourful office and exam rooms that appeal more to children. On besides, most pediatric dentists use smaller sized equipment with children that feel less intimidating. While it's perfectly fine to use adult sized equipment, smaller tools are much more welcoming. A pediatric dentistry office also will hand out stickers, toys, or balloons at the end of the appointment to make your child more comforted and excited to come back!

Therefore, they are likely seeing comparable experiences and cases children since children typically encounter similar issues through growth. A dentist that sees less child patients on occasion won't have this kind of insight. Children's teeth are much different than adult teeth. So starting from infancy to childhood to adolescence, there is an important role of a person who takes care of good oral hygiene throughout this journey, is a pediatric dentist. By being an age-specific specialty, pediatric dentistry encompasses disciplines such as behavior guidance, care of the medically and developmentally compromised and

differently abled patient, supervision of orofacial growth and development, caries prevention, sedation, pharmacological management and hospital dentistry, as well as other traditional fields of dentistry. We are your family dental care providers in the Chicago area and offer general and cosmetic dentistry in addition to our pediatric dentistry services. Schedule a visit for your child today to help start their smile on the right track! Good pedodontic practice never starts at clinic but it starts at home with proper brushing, patient education, diet counselling and motivation. In the beginning pediatric dentistry was mainly concerned with extraction and restorations. There is a tendency nowadays to encourage the use of natural substances in dentistry. Aloe vera is one of these substances, which has recently gained great importance in clinical research. To evaluate the effectiveness of Aloe vera mouthwash in improving plaque, gingival and gingival bleeding indices in children. The trend changed from extraction to preservations. Presently the concept of pediatric dental practice is prevention and concentrating on minimal invasion. Any curative treatment provided should be minimally invasive, preferably nonsurgical and conserve tooth structure as much as possible. In addition, an inadequate and unsatisfactory dental treatment during childhood can permanently damage the entire masticatory apparatus of the child leaving him with many dental problems commonly encountered in today's adult population. Long lasting beneficial effects also can result when the seeds for future dental health are planted early in life. Oral health needs of children who are the bright future of our globe have to be upraised. Children are same all over the world. Languages, customs and religions may differ, but the motto grows up with a healthy smile remains all over and forever. Congenital neural tube defects (NTD) are communal malformations both as an isolated form and a part of genetic syndromes. Extremely fast development of molecular genetics confirms that almost all NTD are genetically dependent in terms of aberrations in different regions of a chromosome or single gene mutations. On the other hand, NTD are an important component of diverse genetic diseases, including monogenic and metabolic disorders with mutations (often called polymorphism) genes responsible for the condition of the MTHFR gene. The genes participating therein are located near on each chromosome, mainly on pathways, along with ligand genes and co-factors, transcription factors or individually. Several mechanisms on NT development are based on the balance between apoptosis, proliferation and migration. Crucial genes regulatory fetal development, including the creation of neural tube and the forming of vertebral continuity are primary home box genes

grouped in 4 clusters HOX1-4. Other genes condition the forming of different structures. The most important pathways are Shh, Wnt, FGF, Notch, and BMP. Instead of recognition that periconceptional folic acid supplementation in reproductive age women decreases the risk of fetal neural tube defects (NTDs), these malformations remain as the second most collective serious fetal birth defect in the United States, are mostly surpassed only by congenital heart defects. Methods castoff to detect neural tube defects are now a component of routine obstetrical care, and include both second trimester maternal serum alpha-fetoprotein (MSAFP) levels and fetal ultrasonographic evaluations. Once an NTD is finds as a various management options are available for families, including consideration of pregnancy termination, in utero fetal surgery, as well as referral to a tertiary care center for management and delivery. Therefore, it is useful for the practicing obstetricians to be aware of these complex diagnostic and management options for optimal care of the obstetric patient and fetus.¹ In this chapter, the etiologies, antenatal diagnosis, and management, as well as information regarding prevention are find out. All pregnant women have the possibility to undergo prenatal screening/diagnosis for genetic conditions and/or birth defects. Specific signs for genetic counselling and prenatal diagnosis options include a history of chromosome abnormality, Mendelian genetic disorder, or metabolic disorder; increased risk for neural tube defect; abnormal maternal serum screening test; or a fetal anomaly suspected/diagnosed on ultrasound. Fruitful prenatal diagnosis requires a known condition associated with a structural abnormality visible in the fetus, a biochemical abnormality in amniotic fluid/amniocytes, or a known molecular mutation. Preimplantation genetic screening/diagnosis selects out embryos with a genetic condition or aneuploidy and transfers either chromosomally normal embryos or embryos without the at-risk genetic condition.

These pathways are closely connected with other structures of the body, like conus heart, thymus, intestinal tract, skin or sympathetic nervous system. The most complicated is closing of column. On the one hand, this process does not depend on one but on numerous genes, especially Pax3 and Pax7 and on the other hand, it depends on proper work mainly of folic acid path, as well as vitamin B12 and choline. The brain and spinal cord of a growing fetus develop from a simple structure called the neural tube. The neural tube 'zips up' along its length to close and protect the brain and spinal cord. If the neural tube doesn't close at any part along its length, the baby will have a neural tube defect.

A range of genetic and environmental factors are thought to be responsible for NTDs, including the mother having not enough of the vitamin folate and some epilepsy medications. Taking folate (folic acid) before and during early pregnancy can suggestively decrease the chance that a mother will have a baby with this kind of birth defect. Neural development is also

affected by the imprinting (about 30 genes) and the inactivation of the X chromosome in day 21st of embryo development. In our daily prenatal practice we are able to find specific NTD as soon as 12th week of gestation but our target is to confirm if NTD may be of truly remote nature or not particular mild ultrasound co-markers. As you can see above, we have a lot of information and we can prevent many open NTD, but still affected children are born. It means that our knowledge about it is not yet complete. Presently, we have some possibilities to help the baby in uterus to close peripheral open NT if it??? not too big and has isolated nature.