Summary

Long-term outcome of extremely preterm neonates depends on many endogenous and exogenous factors. Long-term follow-up of extremely preterm neonates during childhood and analyses of *IGF1* gene polymorphisms may help to better understand the problems connected with delayed postnatal growth and the progression of cardiovascular diseases and diabetes mellitus type 2 in adulthood.

The aim was the long-term follow-up of anthropometric parameters in children born at 22−25th and 26−27th week of gestation and to study the association between postnatal growth of extremely preterm children, children small for gestational age (SGA) and children born at term with appropriate birth weight/length (AGA) and *IGF1* gene polymorphisms: $(CA)_{10–24}$ repetitive polymorphism in promoter, microsatellite marker D12S318 and 185 bp in 3´UTR, $(CT)_n$ polymorphism $(CA)_n$ polymorphism 216 bp in the intron 2.

Methods. 242 infants born at 22–27^{+6} weeks were enrolled. Anthropometric parameters were measured at the ages of 2 and 5 years in 72 children born at 22–25^{+6} week (group I) and 85 children born at 26–27^{+6} week (group II). Polymorphisms of *IGF1* were analysed in 51 extremely preterm, 208 AGA and 59 SGA children using fragment analyses. The data of postnatal growth data in AGA children were obtained at 18 months, in SGA and extremely premature children at 12 and 24 months.

Results. Of 242 treated infants, 202 survived (83.5%), 14.9% of them have major disability. "Catch-up" growth was observed in both groups, but the height at 2 and 5 years remained lower ($P < 0.01$) in comparison with the control population. A decline in head growth associated with the standard deviation score (SDS-HC) decline was accompanied by an increased number of children with HC < -2 SD (group I – 18%, group II – 11.7%). No differences in the frequency of wild type allele with $(CA)_n$ repeats and polymorphisms with $(CA)_{<19}$ or $(CA)_{>19}$ repeats were observed between AGA, SGA and preterm children. The birth weight/length in AGA wild type $(CA)_{19}$ homozygotes were lower in comparison with AGA carriers of other $(CA)_n$ polymorphisms but the differences disappeared until the age of 18 months. In SGA and preterm children, no differences were found between the number of $(CA)_n$ repeats and anthropometric parameters at birth and at 12 months. No differences were found between other *IGF1* gene polymorphisms and anthropometric parameters in all groups.

Conclusions. The outcome of infants born at 25th week is comparable to those born at 26−27 week. The risk of adverse outcome was higher below 25th week. The extremely premature neonates were smaller at 5 years in comparison with their peers. In addition, a decreased head

growth was observed between 2 and 5 years, 15% of them had HC microcephaly < -2 SD. Our results have not shown any impact of $(CA)_n$ repeats in *IGF1* gene on postnatal growth.
Keywords: extremely low birth weight, postnatal growth, *IGF1* gene polymorphisms