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Title: The effect of growth hormone therapy, adenotonsillectomy and genotype on obstructive sleep apnea in children with Prader-Willi syndrome

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Body: Objective: To review the effect of growth hormone (GH) therapy, adenotonsillectomy (AT) and genotype on obstructive sleep apnea (OSA) in children with Prader-Willi syndrome (PWS). Methods: Retrospective review of children (lt]18 years) with PWS referral to our institution. Polysomnograms were scored by American Academy of Sleep Medicine pediatric rules. For comparisons of age, body mass index and polysomnographic variables between pre- and post GH therapy and pre- and post- AT, Wilcoxon and Mann Whitney U tests were used. For comparisons of genotype and presence of OSA defined as an apnea hipopnea index (AHI)≥2/h, Pearson's chi-squared test was used. Results: Twenty-one children with diagnosis of PWS were evaluated, 16 had a diagnosis of OSA. 8 and 5 children had a polysomnograms before and after initiation GH therapy and before and after AT, respectively. There were no significant changes in AHI before and after initiation GH therapy (p=0.6). Of note, 5 children increased AHI and 3 decreased (range -8 to 9.55). Although there were no differences between AHI pre and post-AT (p=0.2), AHI improved in 4 patients and 1 worsened. No differences were observed between genotype (deletion, uniparental disomy and imprinting defects) and OSA (p= 0.3). However, higher percentage of OSA was observed in deletion than uniparental disomy mutation (83.3% vs. 62.5%).Conclusions: Although no differences in OSA before and after GH therapy and AT could be demonstrated in children with PWS, some of them showed a worsening after GH therapy and no resolution post-AT. Our findings highlight individual assesment with sleep studies in the management of children with PWS.