Tooth wear in Prader-Willi syndrome - an association to gastro-oesophageal reflux? A pilot study

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Background

Prader-Willi syndrome (PWS) is the most common genetic human obesity syndrome. The syndrome has a characteristic phenotype including severe neonatal hypotonia, hyperphagia, obesity, short stature and intellectual disability. A narrow forehead, almond-shaped eyes, down-turned corners of the mouth and a thin upper lip are characteristic facial features (figure 1). Decreased salivary flow rate and increased amounts of salivary ions and proteins have been reported in individuals with PWS. Severe tooth wear, both erosive wear and attrition, has also been reported (figure 2).

Aim

The purpose of the present study was to examine if gastro-oesophageal reflux (GORD) may be a causative aetiological factor in tooth wear in individuals with PWS.

Figure 1

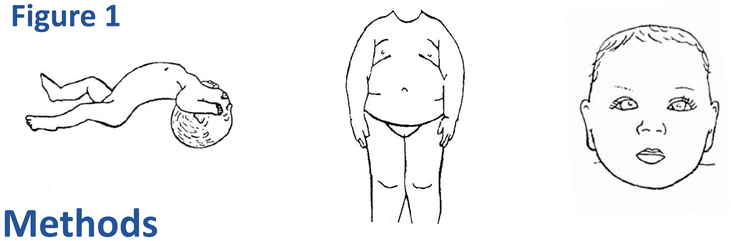
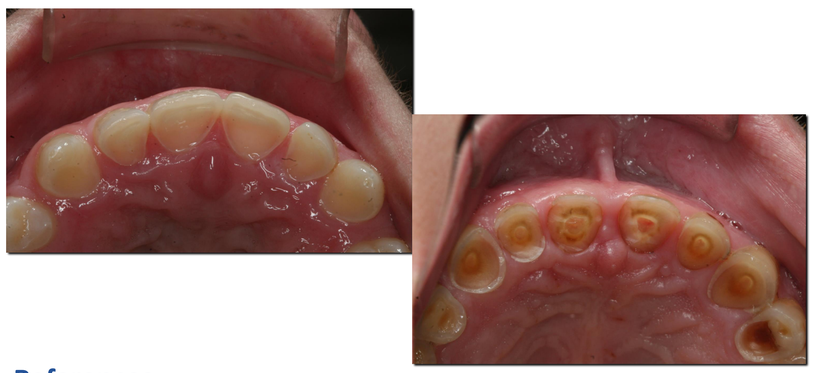
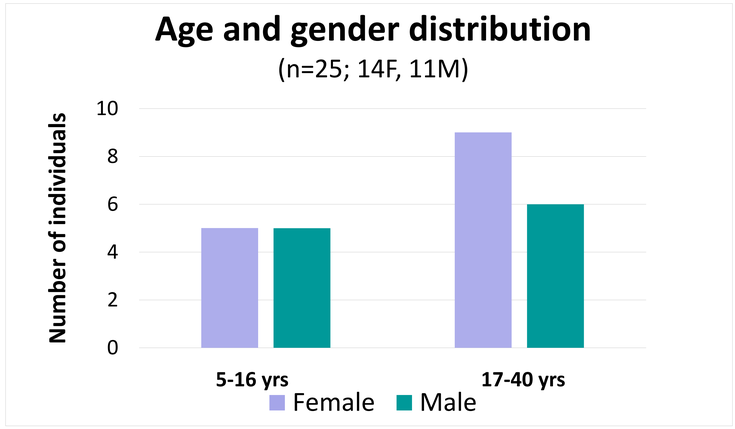


Figure 2



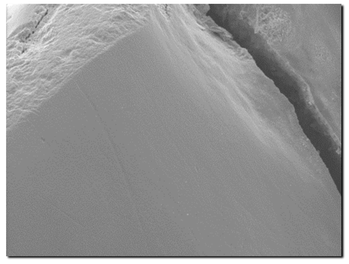
Methods

Twenty-five individuals (14F, 11M) aged 5-40 years participated in the study and 24-hour oesophageal pH-metry was used to examine the prevalence of GORD. 32 primary and 10 permanent teeth, representing 16 individuals were analysed. The enamel surface was studied using scanning electron microscopy (SEM). The microscopic structure of enamel and dentine was studied using SEM, microradiography and light microscopy.

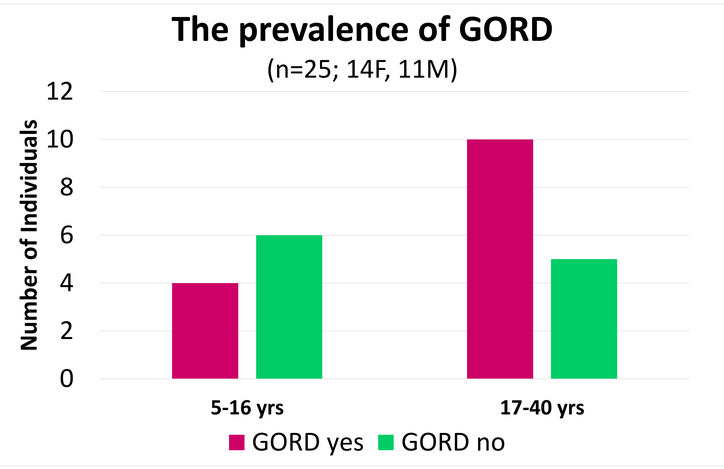


Results

24-hour oesophageal pH-metry showed serious GORD with need of medication in 4 out of 10 children aged 5-16 years and 10 out of 15 adults aged 17-40 years.



The enamel surface was found to be thin and rather smooth and structureless, or more rough, resembling an acid-etched enamel surface. The microscopic structure of enamel and dentine was found to be normal, with the exception of a slight increase of interglobular dentine.



Conclusions

The enamel surface was found smooth and could in some respects resemble the effect of an acid agent. 56% of the study participants had serious GORD. GORD is therefore a likely aetiological factor in tooth wear in individuals with PWS.

References

1. Cassidy,S.B., Schwartz, S., Miller,J.L., & Drisoll,D.J.(2012). Prader-Willi syndrome. Genetics in Medicine, 14(1),10-26.
2. Saeves,R., Espelid,I., Storhaug,K., Sandvik, L., & Nordgarden,H.(2012). Severe tooth wear in Prader-Willi syndrome: a case-control study. BMC Oral Health,12.