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Frequency and distribution of enamel hypoplasias in an 18th century sample

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Enamel hypoplasias are considered useful indicators of exposure to a health disturbances and stress at the time of the enamel formation. In a historic sample, they may provide a relative measure of that exposure stress. A sample of 104 skulls from an 18th century Požega cathedral crypt was examined for the frequency and distribution of enamel defects ranging from surface pits to linear enamel hypoplastic changes. Data were analyzed by means of descriptive and non-parametric statistical methods. The percentage of enamel hypoplasias was 11.14 % if total possible number of teeth was taken into consideration. However, when only present teeth were accounted for, the percentage of hypoplasias was 22,61 %. The most frequently affected maxillary teeth were canines (left 32,0%, right 35,9%), upper lateral incisors (left 23,3%, right 29,1%), and upper central incisors (left 16,5%, right 20,4%). The most frequently affected mandibular teeth were canines (both left and right 17,5%) and right first lower molar (10,7%). Significant differences in the distribution of hypoplasias between males and females were found for upper premolars (Mann Whitney U test, $Z=-2,408$, $p=0,016$), upper canines (Mann Whitney U test, $Z= -3,073$, $p=0,002$), upper incisors (Mann Whitney U test, $Z= -2,158$, $p=0,031$) as well as total number of hypoplastic teeth in the maxilla (Mann Whitney U test, $Z= -3,059$, $p=0,002$) and the mandible (Mann Whitney U test, $Z= -2,192$, $p=0,028$). No differences in hypoplasia distribution was found between age groups (Kruskal Wallis test, $p>0,05$). The high level of stress in this skeletal sample may indicate the susceptibility of children to diseases and systemic disturbances during growth in the early and mid childhood. A big plague epidemic in 1739 in Slavonia region as well as epidemics of chickenpocks, typhus, malaria and diphtheria throughout 18th century could have contributed to a hypoplastic changes observed in presented population.

Key words: 18th century; enamel hypoplasia; stress exposure