Abstract

The purpose of this diploma thesis is to analyze facial skeleton asymmetry and its relationship to mastication. It is related to the study „Skull Shape Asymmetry and the Socioeconomic Structure of an Early Medieval Central European Society“ (Bigoni et al., 2013). The 3D geometric morphometric analysis of adult skulls from the Mikulčice settlement revealed that the most significant directional asymmetry (DA) is in the facial area and that there were different DA values in individuals from different socioeconomic classes (castle, subcastle). The facial skeleton DA was interpreted as a result of unequal masticatory loading of jaws. The aim of this thesis was to analyze the relationship of facial skeleton DA and mastication by tooth attrition and temporomandibular joint (TMJ) osteoarthrosis. The material consisted of 193 individuals, 125 from castle and 68 from subcastle. The attrition was evaluated in premolars according to Smith (1984) and in molars according to Scott (1979). The 3D coordinates of 35 mandibular landmarks were scanned and the TMJ osteoarthrosis was evaluated according to Rando and Waldron (2012). There were no significant differences in attrition value nor in attrition DA among the groups. The value of attrition was found to be age-dependent, but not sex- neither burial area-dependent. The mandibular form and shape were significantly dependent on both sex and burial area but the mandibular DA did not differ among the groups. The TMJ osteoarthrosis asymmetry was not significant. There was a significant relationship between facial skeleton DA and mandible DA but no relationship was recorded among attrition DA and DA of the facial skeleton and the mandible. It can be concluded there were no significant subsistence differences between castle and subcastle area because the areas did not differ in atrittion neither in mandible DA values. Significant attrition DA and TMJ osteoarthrosis asymmetry were not recorded. The directional changes of mandibular landmarks support the right chewing side preference hypothesis. Eventhough there was no exhibited difference in mandible DA by sex neither by socioeconomic class, the significant relationship between facial skeleton DA and mandible DA was recorded. The complexity of facial skeleton and mandible DA relationship was concluded to be a result of compensatory and adaptative function of the mandible.

Key words: directional asymmetry, attrition, mandible, facial skeleton, temporomandibular joint, mastication