Dental Bioarchaeology of Skeletal Remains from Waqqas: A Classical Site In Jordan Valley

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ABSTRACT:

A total 2729 teeth that were recovered from two Necropolii (necropolis I and II) at the Waqqas site during the 1999 excavation field have been studied for three main dental pathological conditions and for dental morphology. Waqqas is a classical site in the Jordan Valley, located about (45) km to the west of Irbid and (30) km to the north of Pella.

The dental pathologies that were investigated in both permanent and deciduous teeth were: dental wear, dental caries and dental enamel hypoplasia. The dental morphological traits were investigated only on the permanent teeth to determine the major geographical racial subdivision that the people of Waqqas belong to, using the ASU system for scoring the morphological traits. Two different system were used in both permanent and deciduous teeth for scoring the dental wear, the smith system of 1984 which consists of eight stages was used for scoring dental wear degree on the anterior teeth. The scott system of 1979 which is a quadrant system using a 10 point scale with a range of 4-40 was used for scoring dental wear on molars. Dental caries were scored by tooth type and location according to Moore and Corbett (1971) (Occlusal surfaces, interproximal surfaces, smooth surface, cervical, root, large caries and non-curious pulp exposure). Dental enamel hypoplasia was scored by type for each tooth type using Buikstra and Ubelaker (1994) (Linear horizontal groove, linear vertical groove, linear horizontal pits, nonlinear arrays of pits, single pits and diffuse and discrete boundary opacities). Estimation of age at death was determined on both adult and children using two different systems, Mile's method was used in permanent teeth, which was based on the severity of dental attrition, and the sequences of eruption and development of teeth was used for deciduous teeth.

The findings of this research show that the Waqqas people relied heavily on agricultural products as the main subsistence economy. The average dental wear degree on ICP teeth was decreased toward the premolars from incisors, except on the canine and some
times on lateral incisors. This is because wear degree is an age specific process, the earlier the eruption of the tooth the higher the wear degree. The shape of the tooth plays a major role in the wear degree, for example the canines teeth have a pointed cusp, which enables them to be involved in cutting or slicing of food more than the other ICP teeth. Molars have higher wear degree because they function as a grinder and the average wear degree decreases from the first to the third molars, which indicates grinding and mastication of a hard food. Based on the severity of wear on the first mandibular molars, which usually have the highest wear degree, an estimation of age at death was conducted. The majority of Waqqas people seem to have died before the age of 20 years, mainly at seventeen or eighteen years of age.

The percentage of dental caries of Waqqas people was not unexpected and is similar to the percentage of other Byzantine sites like Yasileh and Sa'ad. Waqqas dental caries percentage was higher than Sa'ad people and lower than Yasileh. This percentage of dental caries is due to the high carbohydrate content of their food, which ultimately leads to high dental caries.

The analysis of dental enamel of hypoplasia shows that the Waqqas people had suffered from various types of stress during their childhood, mostly nutritional stress, as most of the hypoplastic defects where formed during the 2-3 year and 3-4 year up to the fifth year. This is corresponding at the weaning time. It appears that most of LEH was not fatal due to the fact that many teeth showed more than one line of hypoplasia on their crowns, as these stresses make them more susceptible to diseases. The high percentage of DEH is another evidence of the subsistence economy of Waqqas people commonly used.

The findings of deciduous teeth support the permanent teeth. The significant findings of the deciduous teeth were the DEH, which indicates a significant prenatal and early infancy nutritional and environmental stress. Most of the children survived till 7 - 10 years of age as
estimated from the sequences of eruption and development of second mandibular deciduous molars.

The people of Waqqas, belong to the Western Eurasian major geographical subdivision (Caucasian racial stock) which is inferred from the twenty three dental morphological traits examined in this study. The results are expected according to the location of Jordan where the site is located. The same result was found by other researches that studied Byzantine sites in Jordan.