Periodontal disease in the Mycenean (1450-1150 BC) population of Aghia Triada, W. Peloponnese, Greece

This study investigates the incidence of periodontitis in a Mycenean population unearthed at the cemetery of Aghia Triada (West Peloponnese, Greece) during the 1989-1997 field season. The material consists of 172 dry skulls. Demographic parameters of sex and age were difficult to be assigned due to the bad state of preservation of the skeletal material. The ratio was 50 males, 48 females, 65 unidentified and 9 children, and we estimated an average age of 38 years. In this work we used traditional and modern methods to determine the incidence of periodontitis in the archeological human dental bone. We also recorded other dental diseases, such as ante mortem tooth loss, caries and attrition. The results showed that periodontitis has affected 35% of the jaws. A notable percentage of the individuals - 24% - lost three or more teeth during their lifetime and a total 53% of the population had extracted teeth before death. This paper points out that the ancient jaws present a high proportion of ante-mortem tooth loss, attrition and deep caries, whereas the frequency of periodontitis does not seem to differ from that of other prehistoric samples.

Introduction

The present study investigates the pathology of jaws in a Mycenean population that lived near the area of Ancient Olympia, in Western Greece. The Mycenean period ranges from 1450 BC to 1150 BC. The excavation findings and the epic poems of Homer witness to a brilliant civilization. The Mycenean period had succeeded the Minoan civilization. The sudden fall of the Mycenaeans was followed by the first Hellenic medieval period. 400 years after the end of the Mycenean period the first Olympic Games (776 BC) begin, and also, nearly 700 years afterwards, Athens meets its Classical Golden Era (Faure, 1975).

One of the most serious oral diseases is periodontitis (Figure 2). Periodontal disease is an inflammatory condition that affects the gingivae and the alveolar bone of the jaws. Because this disease can be identified in archaeological bones, it is possible to document its natural history. One of the most striking examples of bone loss, which is due to periodontal disease, has been recorded in the jaw of an early hominid, Australopithecus africanus, dated approximately at 2 million years B.P. This case appears to be the first detailed description of a recognized disease in hominid evolution (Ripamonti, 1988).

A number of methods have been used to assess the frequency of periodontal disease in past populations. Usually periodontitis has assessed only by measuring the distance between
the cemento-enamel junction (CEJ) of the tooth to the alveolar crest of the bone (Davies et al., 1969; Lavelle & Moore 1969; Goldberg, 1976; Lavigne & Molto 1995). This linear measurement, however, overestimates the frequency of periodontitis because it ignores the super-eruption of teeth due to occlusal wear, a finding that occurs in all ancient population samples.

Recent studies (Costa, 1982; Kerr 1998a,1998b) focused on the alteration of the architectural form, and the deterioration of the texture of the crestal bone. All these studies contributed to a remarkable advance in periodontal research and particularly on ancient dry skulls.

Aim of the study: The present study attempts to investigate the frequency and the type of pathological corruption of the alveolar bone in relation to the gradual increase of the distance: cemento-enamel junction - alveolar crest. It is an effort to determine the destructive effects of periodontal disease from the shallow to the deepest areas close to the roots of the defected teeth. This study also tries to search the relationship between periodontitis and other dental diseases that afflicted this ancient Hellenic population.

Material and Methods

Material

The material of this study consists of a skeletal series unearthed from the Mycenean cemetery of Aghia Triada, West Peloponnese, Greece, excavated during the field season of 1989-1997. Some 172 individuals were found, and it was considered that the sample was representative of the local agricultural population, since individuals of both sexes and all age groups were identified. The preservation of jaws was not identical. Sex was determined in the majority of the specimens and the ratio was 50 males, 48 females, 65 unidentified adults, and 9 children.

The estimated average age is about 38 years. The age estimation was determined by studying the pubic bone, the external cranial sutures, the sutures of the maxilla (Buikstra & Ubelaker, 1994), and in some skeletons, from the degree of occlusal attrition (Miles, 1962). The excavation works uncovered 11 skeletons with complete dentitions, 45 with one of both jaws, 75 with one of four quadrants, and finally 41 individuals with smaller parts of jaws and many disarticulated teeth. In order to have the maximum information revealed from this prehistoric material, periodontitis was separately measured in all the above categories. Those individuals represented by small parts of maxillary and/or mandibular bone (included less than 5 teeth) and the disarticulated teeth were not included. Four age categories were identified: 1-15 years, 16-25 years, 26-35 years and 36-45+ years. The infant group and the adults without estimated age were not included in this investigation.