



SHORT NOTE

AN ANCIENT GREEK VETERAN-WARRIOR WITH STAFNE'S CAVITY

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ABSTRACT

This brief communication aims to note on the rather rarely reported condition of Stafne's cavity (Stafne, 1942) among ancient Greek populations affecting in this case a 7th c. BC, older (from 55 to ca. 60/65 years of age) male individual retrieved from the "Akpinar" necropolis of Klazomenai (Klazoumen-Urla, Turkey), one of the twelve cities of the Greek Ionian Confederacy located in Asia Minor (Herodotus, 1:142).

KEYWORDS: Stafne's cavity, metopism, trauma

The Klazomenae male showed a well-developed, very robust, skeleto-anatomic build revealing a considerable number of cranio-dental (Figures 1, and 2) and infra-cranial acquired and degenerative palaeopathologic manifestations, with emphasis on grievous, yet skeletally healed, traumatic conditions which had been afforded by external physiological impacts (Agelarakis, 2007).

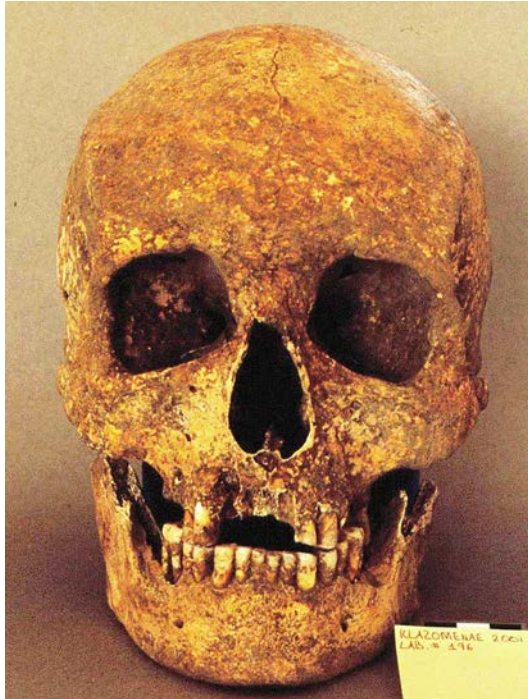


Figure 1 Ventral cranial view



Figure 2 Right lateral cranial view

A synthesis of the particular nature and loci of morpho-anatomic axial skeletal changes, appendicular musculoskeletal

stress markers (Radin, 1982; Kennedy, 1983, 1989, 1998; Agelarakis, 1997; Larsen, 1997; Jurmain, 1991; Kennedy et al., 1999; Lovejoy et al., 2003; Al-Oumaoui, et al., 2004; Eshed et al., 2004; Zumwalt, 2005; Molnar, 2006, 2010; Cashmore and Zakrzewski, 2013) of both habitual and occupational *intra vitam* conditions, reconstructions of specific long term physically demanding activities carried out *ante mortem*, along with the cranio-infracranial distribution of sustained trauma, provided skeletal evidentiary data advocating for the high possibility that the Klazomenae male had been involved in the arts of war and inevitably in armed conflict. Further, the overall palaeopathological profile assessment, in conjunction with aspects of the archaeological data made available by the excavator, as well as historical records, lend considerable support to the thesis that the Klazomenae male would have participated in professional military services in Egypt during the 26th, Saitic, Dynasty, under the reign of Psamtik I (Herodotus, Historia 2: 151-154; Agelarakis, 2014).

Along with the valuable information permanently recorded in his dental and skeletal record (the theme of a separate, forthcoming, report), the Klazomenae male revealed a unilateral, smooth, ovoidal in shape, Stafne's cavity (Stafne, 1942; Prapanpoch, and Lamglais, 1994), measuring 10.93 x 13.37mm wide, and ranging in depth between 0.82 to 1.64mm (Agelarakis et al., 2010). It marked the postero-lingual juncture of the left mandibular ramus (Figure 3), bordering the most antero-mesial insertion terminus of the *M. pterygoideus internus*. Located below the inferior dental nerve canal and superiorly to the alveolar mandibular border with uncompromised cortical bone walls it was diagnostically differentiated from a hemorrhagic, or a traumatic cyst, or a lytic lesion. Although the aetiologic and aetiopathologic agents (Stafne, 1942; Wolf et al., 1986; Shields and Mann, 1996; Shields 2000; Gomez et al., 2006) and the descriptive terms (Lello and Makek, 1985; Barak et al., 1993; Prapanpoch and Langlais, 1994; Branstetter et al., 1999,

Lukacs and Martin, 2002) of the manifestation seem to vary in the literature, clinically the defect is asymptomatic and static, and if not idiopathic in nature, then possibly developmental due to submandibular salivary gland pressure, as in the case of this posterior variant, with significant predilection to males versus females at clinical ratios ranging between 8:3 and 6:1 respectively (Correll et al., 1980; Philipsen et al., 2002; Gomez et al., 2006), and in the vast majority of diagnostic incidences past the end of the 4th and through to the 6th decade of life (Wolf et al., 1986; Barrer, 1988; Philipsen et al., 2002; Gomez et al., 2006; Dolanmaz et al., 2009). It has also been reported that its

prevalence appears to be diminishing with latitudinal geolocation from 10% at tropical biomes, to 4% in temperate ecotones, to less than 1% in arctic areas possibly due to environmental factors, thus limiting the load availability of alimentary track macroparasites (Shields, 1998; 2000; Cook, 1992). Regarding the latter, it is suggested that in addition to the limiting environmental parameter purported to affect the aetiology of Stafne's cavity, consideration of aspects of the human condition and cultural traditions of the respective population groups under study could possibly offer valuable explanatory data on this matter of manifestation prevalence.



Figure 3 Lingual mandibular view showing Stafne's cavity (arrow)

Further to the case study of the Klazomenae male, the lack of any pathogenic in nature reactive skeletal complications focal to the Stafne's cavity supports the proposition for rather fairly asymptomatic *ante mortem* conditions. Whereas causative agents are reported in the literature to be heterogeneous in aetiological nature (Stafne, 1942; Choukas, 1973; Wolf et al., 1986; Shields and Mann, 1996; Shields 2000; Philipsen et al., 2002; Gomez et al., 2006; Araujo et al., 2009), it clearly appears that localized pressure by appositional effects may explain the basic causality of the defect, suspectedly as in the case of glandu-

lar tissue pressure relative to the submandibular and parotid salivary glands (Shields, 2000; de Courten, 2002).

In considering that focal appositional pressure, rather than a congenital condition, may have been the causative agent of the Stafne's cavity, it should be possibly of interest to note that the Klazomenae male manifested unilaterally emphasized osteoarthropathic changes at the left mandibular fossa (the left mandibular condyle was not preserved), ipsilaterally to the Stafne's cavity. Based on the paleopathologic assessments of jaws and teeth there were no discernible manifestations which

would reflect on preferential masticatory modification with emphasis on the left maxillo-mandibular dental quadrants, while it is suspected that *ante mortem* trauma impact, sustained on the left frontal tuberosity, could have contributed enough trajectory forces of traumatic stress to initiate the onset of temporo-mandibular joint arthropathy.

Whereas the present, archaeological in nature, case study may not be able to elucidate questions relative to the potential of any non-random correlation among the ipsilateral manifestations of the traumatic impact, the osteoarthropathic changes, and the Stafne's cavity, it is anticipated that future clinical orofacial research may consider investigating for the plausibility of such interrelations.

Furthermore, the Klazomenaeon male exhibited ectocranial vault and lateral walls' incomplete suturaleal synostosis, with emphasis on a complete (from *nasion* to *bregma*) *sutura metopica persistens* (Bolk, 1917; Schultz, 1929; Torgensen, 1951); a rather rare cranial morpho-anatomic variant, recorded in the literature (Schwartz, 2007)

to be observed at a prevalence of ca. 10% among human populations although even rarer in the experience of the author in working with ancient skeletal materials, and rather more prevalent among female than male individuals particularly in the case of ancient Greeks. As it appears that in cases of premature metopic suture closure the formation and synergy of hondroidal tissue is involved in the synosteotic processes (Hall, 1967; Manzanares, et al., 1988), it would then seem that in conditions of *sutura metopica persistens* the overall processes that would have acted toward the synosteotic process, including aspects of the formation and active involvement of hondroidal tissue, would not have been as active as normally expected. If this contemplation could be linked to a framework of further testing for the explanatory hypothesis that the cavity was caused by lingering cartilaginous tissue due to insufficient bone deposition (Stafne, 1942), it would then provide through continued orofacial research additional fine-tuning regarding the heterogeneous causes of the defect.

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