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Book Review

Medial Mandibular Ramus: Ontogenetic, Idiosyncratic, and Geographic Variation in recent *Homo*, Great Apes, and Fossil Hominids

(by Gary D. Richards, Rebecca S. Jabbour and John Y. Anderson. BAR International Series 1138, Oxford, 2003).

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Medial mandibular ramus, particularly the morphology of its internal aspect and the attachment area of the *m. pterygoideus medialis* have been argued to be of taxonomic importance in human fossil record. This muscle's insertion site, described as the medial pterygoid tubercle (MPT) has been regarded as Neandertal autapomorphy by several authors[1–4] and its formation considered to be under genetic control. Other authors[5–6] argued that this character is of no taxonomic value in differing Neandertals and anatomically modern humans. Furthermore, analyses by Quam and Smith[7] showed high values for the presence of MPT in Neandertals, while Tillier proposed it to be plesiomorphic, not apomorphic condition. All this resulted in a need for a detailed study of this anatomical area.

Richards, Jabbour and Anderson's study includes the ontogenetic aspect, as well as study of evolutionary changes in this region through a detailed analysis and comparison using human fossil sample, great apes, and recent humans. Furthermore, authors include results of their observations on the soft tissues based on human cadavers. Their results suggest that MPT is present in modern human sample, although in a smaller percentage (about 31% for the combined sample) in modern humans than is reported for Neandertals (about 70% according to Quam and Smith[7]).

Another feature commonly noted as expressed in a high percentage among Neandertals is the so-called horizontal-oval (H-O) position of the *foramen mandibulae* (noted by Gorjanović[8], Smith[9–10], among others), which is a result of the partial ossification of *l. sphenomandibulare* and the lingual bridging of the mylohyoid groove. H-O foramen has thus been proposed to be of taxonomic significance. According to Richards and colleagues, the lingual bridging is not apomorphic for Middle to Late Pleistocene hominids. The bridging pattern, however, can be viewed as a synapomorphy for later Middle Pleistocene humans and recent *Homo sapiens*. Neandertals therefore exhibit a mixture of symplesiomorphic traits in common with preceding archaic humans and synapomorphic traits in common with later anatomically modern humans – this re-

jects any autapomorphic claims for their anatomy of the MPT and adjacent regions. They do, however, tend to exhibit somewhat strongly marked insertion sites for the *m. pterygoideus medialis* than is seen in recent human sample.

Richards and colleagues also turn their attention to the overall changes in medial ramal morphology from *Australopithecus* to recent *Homo sapiens*. According to them, *A. afarensis* exhibits a morphology that is similar to that of *P. troglodytes* and a combined group of *Gorilla, Pongo* and *P. paniscus.* In later australopithecines, there is a tendency for reduction of the angular variation in the relationship between the anterior and posterior sulcal components. The exception is noted in *A. africanus* sample, which exhibits anatomy similar to that of *H. habilis*. Early African *H. erectus* seems to be intermediate in features between the preceding hominids and later *Homo*, while later *H. erectus* (represented by Ternifine, Thomas Quarry and the Zhoukoudian sample) is more similar to later *Homo*, which is also true for the later archaic *Homo sapiens* group (Ehringsdorf, Arago, Zhoukoudian, Mauer). In Neandertals, a continuation of the anatomical trends seen in preceding fossil group is observed, with certain differences seen in the changes in the *l. mandibulae* and the insertion of the *m. pterygoideus medialis*, resulting in the aforementioned H-O mandibular foramen.

In the modern field of evolutionary anthropology, noting simple absence or presence of a trait is of no value. We need to understand the underlying processes and the complex interrelationship of various factors that result in formation of any morphological characteristic, including ontogenetic changes, variation in time and space, and numerous other factors. Any such complex study, as Richards and colleagues' certainly is, presents a valuable addition to the field of paleoanthropology, and to our understanding of particular details of hominid morphology. Small mistakes, such as incorrect spelling of J. Kallay's name (not Kally, as it appears in the references, as well as in the text, e.g. pp 9, 61 etc) do not have a greater impact on the overall value of this study.

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