



## Patterns of human evolution in northeast Asia with a particular focus on Salkhit



Damdinsuren Tseveendorj<sup>a</sup>, Byambaa Gunchinsuren<sup>a</sup>, Eregzen Gelegdorj<sup>a</sup>, Seonbok Yi<sup>b</sup>, Sang-Hee Lee<sup>c,\*</sup>

<sup>a</sup> Institute of Archaeology, Mongolian Academy of Sciences, Ulaanbaatar 51, Mongolia

<sup>b</sup> Department of Archaeology, Seoul National University, Seoul 151-742, Republic of Korea

<sup>c</sup> Department of Anthropology, University of California at Riverside, Riverside, CA 92521-0418, USA

### ARTICLE INFO

#### Article history:

Available online 12 February 2016

#### Keywords:

Human evolution  
Paleoanthropology  
Archaic  
Morphology  
Salkhit  
Northeast Asia

### ABSTRACT

Despite the well published mixture of archaic and modern features in fossil hominins, a presence of archaic features is still used as a basis for a claim of an archaic specimen. In this paper, the archaic appearance of a hominin fossil specimen from Salkhit, Mongolia, is examined to ask if Salkhit looks archaic because it is an archaic specimen like a classic *Homo erectus*. The morphology and metrics of the Salkhit skullcap was compared with Middle and Late Pleistocene hominin fossils from Zhoukoudian: Locality 1 and Upper Cave. Results show that the archaic features that Salkhit shares with the Locality 1 sample are also shared with the other sample, Upper Cave. On the basis of metrics, Salkhit is intermediate between the Locality 1 and the Upper Cave specimens. Salkhit is different from the Middle Pleistocene materials in the same way later hominins differ from the Middle Pleistocene sample, in having a broader frontal and thinner supraorbital region. This may reflect encephalization and gracilization, a modernization trend found in many places. Results of this paper are not compatible with the null hypothesis that Salkhit is like a member of the Zhoukoudian *H. erectus* sample. Archaic features may have different explanations: they can be diagnostic features of an archaic species, or regionally predominant features. It is concluded that the latter explains the archaic features of Salkhit.

© 2015 Elsevier Ltd and INQUA. All rights reserved.

### 1. Introduction

It is well documented in paleoanthropology literature that archaic features appear in archaic specimens as well as later specimens in a mixture of archaic and modern features (Wolpoff, 1999). However, it still is a practice often found that a presence of an archaic feature alone provides a basis for a diagnosis of a membership in an archaic species.

A skullcap found in Salkhit, Mongolia (48° N, 112° E) was given a new genus *Mongolanthropus*, based on its archaic morphology, with a suggested date of 800,000 years, based on a woolly rhinoceros discovered in the vicinity (Tseveendorj et al., 2006). The woolly rhinoceros, however, was not found together with the hominin fossil, and therefore it is uncertain that they are contemporaneous. Furthermore, woolly rhinoceros has a lengthy tenure of appearance throughout Pleistocene (Boeskorov, 2012) that the presence of the

fossil species alone is not a reliable or accurate biostratigraphic marker of time.

In the absence of chronometric dating, the various dates that have been suggested range from early Middle Pleistocene (Tseveendorj et al., 2006; Bae, 2010) to terminal Late Pleistocene (Kaifu and Fujita, 2012). Coppens et al. (2008) used a multidimensional scaling method to analyze the mixture of archaic and modern features, and concluded that the Salkhit skullcap clusters with Neandertals, *Homo erectus*, archaic *Homo sapiens*, but ruled out modern *H. sapiens*. Coppens et al.'s study focused on the possible affinity between Salkhit and the Neandertals. If so, it would extend the Neandertal distribution further east of Okladnikov Cave, currently the easternmost Neandertal site (Bae, 2010; Derevianko, 2011).

The Salkhit specimen is unlikely to be as old as 800,000 years. It could be of Middle Pleistocene age: hominins left evidence from the late Early Pleistocene in what is now the mainland Asia continent and south Asia (Zhu et al., 2001, 2003, 2004, 2008; Pappu et al., 2011). Hominin presence is found in Europe as early as 1 Ma

\* Corresponding author.

E-mail address: [shlee@ucr.edu](mailto:shlee@ucr.edu) (S.-H. Lee).

(Dennell, 2003). Given the long history of hominin occupation in Asia and Europe, this paper considers the possibility that Salkhit is Middle Pleistocene in age.

## 2. Methods and materials

The Salkhit skullcap is compared with the only hominin sample of Middle and Late Pleistocene specimens from the geographic vicinity: Zhoukoudian Locality 1 and Upper Cave. Other hominin fossils are isolated individual finds. Because only the skullcap is preserved, comparisons were limited, based on morphology and metrics. Observation and measurements for the Salkhit skullcap were taken on the original specimen as well as on a cast. Photographs are from the original specimen (Fig. 1). Comparison with other specimens was done with casts only.

## 3. Results and discussion

### 3.1. Morphological comparison

At first glance, Salkhit shares similarity in several morphological traits with Locality 1. Salkhit has a weak sagittal keel on the frontal between *glabella* and *bregma*, but there is no prebregmatic eminence. However, the sagittal keel in Salkhit is not as prominent as in the Zhoukoudian specimens, most prominently expressed in Zhoukoudian XII, and comparably weak in Upper Cave 101.

The supraorbital region of the Salkhit skullcap plays a major role in giving an archaic appearance of the specimen (Fig. 2). Seen from the front, the torus forms an M- or a seagull-shape, contributed by the pinching of the glabellar torus. The glabellar torus rises above the nasal bridge and is thinner in supero-inferior height than the supraorbital torus in Salkhit and in some Locality 1 crania (especially in Skull XII (L3)) and Upper Cave (UC 101), but not in others (such as Skull V).

The medial portion of the supraorbitals has greater supero-inferior thickness than the lateral portion, but there is no

difference in the anterior projection between the medial and the lateral portions. The lateral portion of the supraorbital region turns into a slight knob at the lateral ends in both Salkhit and Locality 1 sample; however, the thickening at the lateral ends of the supraorbitals is not comparable to that seen in the Zhoukoudian sample which has a knobbed look. In Salkhit the lateral torus is continuous, but more gracile than the medial portion; in Locality 1, the lateral portion is thicker and smoother, without any interruption in the surface of the torus; the supraorbital torus reaches maximum thickness toward the lateral end to form a knob.

In Salkhit, there is a weak supraorbital sulcus that does not continue across the midline. In contrast, in the Locality 1 sample, the sulcus is an actual gutter that is dipping (as in Skull XII) or shallow and broad (as in Skull V), and is most pronounced where the supraorbital torus is the thickest.

In Salkhit and Locality 1 crania, the supraorbitals are different morphologically between the medial and the lateral halves. The contrast between the medial and the lateral portions of the supraorbital region of Salkhit takes a different pattern in the Locality 1 sample. In the Locality 1 sample, the medial and lateral portions do not have an *incisura*. The medial portion is laterally marked by a supraorbital process (most prominent in Skull X). There is an *incisura* in Salkhit, which is noted as a modern human feature by Weidenreich (1943 p. 29). A supraorbital foramen is absent in the Locality 1 sample, while a double-notch is in the location of the supraorbital process in Skull XII.

When Salkhit is compared with the three specimens in Upper Cave, two specimens, UC 102 and UC 103, have a superciliary arch and do not have a supraorbital torus. UC 101 shows a surprising similarity with Salkhit in many aspects. In both Salkhit and UC 101, the supraorbital bar continues throughout the supraorbital region; the medial portions are thicker than the lateral portions; the supraorbital torus thickens at the lateral end, resulting in a slightly knobbed look. There is a weak but discernible groove that separates the torus into two components, medial and lateral. In Salkhit, the medial and the lateral portions of the left supraorbital are



Fig. 1. Salkhit skullcap: (a) superior view; (b) lateral view; (c) anterior view.

Download English Version:

<https://daneshyari.com/en/article/1040227>

Download Persian Version:

<https://daneshyari.com/article/1040227>

[Daneshyari.com](https://daneshyari.com)