

Human Mummified Remains from the Southern Gobi Desert. Preliminary Report on the Finds of Ten Executed Individuals Dating to the End of the Great Mongolian Empire

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Abstract

In the spring of 2004 a joint team from the Mongolian Academy of Sciences and the Smithsonian Institution removed mummified human remains from a subterranean cave in the southern Mongolian Gobi Desert, just kilometers north of the Chinese border. The remains represent approximately ten individuals, adult and juvenile, and include stomach and bowel contents. Tentative analysis indicates that the individuals were killed through strangulation, garroting, and hanging. Radiometric dating on two samples suggests ages between 1300 AD and 1470 AD (2 sigma calibrated), contextualizing them into a period of volatile cultural change and crisis. Currently, the remains have been shipped to the Smithsonian Institution in Washington, DC, and a study by a multidisciplinary team of Mongolian and American medical, archaeological, and anthropological researchers is in progress.

Background and dating

During the winter of 2003/2004 the Mongolian Academy of Sciences decided to investigate an underground cave located in the southern Mongolian Gobi Desert. Reportedly the cave included some mummified human remains. It became the duty of archaeologists and anthropologists in the Academy's Institute of Archaeology to visit the cave and decide how to best protect its contents. Increased traffic in the area had made the cave generally known, especially among groups organizing tourist visits to the Gobi. The Institute recognized this problem and, being concerned about damage to the remains, a small expedition was scheduled to take place in

the spring of 2004. The expedition was organized as a joint venture between the Mongolian Academy of Sciences (represented by Naran Bazarsad) and the Smithsonian Institution (represented by Bruno Frohlich) (Bazarsad et al., 2005).

The subterranean cave, also known as the Hets Mountain Cave, the Hun Agui (The Human Cave) and the Hets Agui (the Hard Cave) is located about 5 kilometers north of the Mongolian border with China and about 25 kilometers East of the 108° East meridian. It was first brought to the attention of government officials in 1974 by local herdsmen but it took eight years for the cave to be visited by researchers from the Mongolian government. Around 1980, the General Secretary of the Mongolian Revolutionary Party, Mr. Adiya, learned about the cave and requested the Mongolian Academy of Science to initiate a study of its contents. Consequently in 1982 the cave was visited by two scientists: archaeologist N. Ser-Odjav and physical anthropologist D. Tumen. They reported that the cave had been disturbed but still contained twelve bodies representing seven children between newborn and seven years, four males and females around 30 years old, and one 60 years old male. Ser-Odjav found ceramics from the Kidan period and also some woman's pants and wooden plates. Based on these finds he dated the remains to be from around AD 10, or about 2,000 years old. At this time we do not know what happened to these artifacts. Another dating of the cave's contents relates to a legend circulating between local herdsmen. The tale suggests that a local thief named Dashesamba massacred his entire family during a killing rampage and later escaped criminal charges by fleeing across the border to China. Originally a Buddhist Lama, Dashesamba became a thief. This event should have taken place between 1937 and 1939, during the same period when the Stalinist regime in Ulaanbaatar was involved in mass executions of Mongolian Buddhist monks (Frohlich et al., 2004).

Recently we submitted two samples for radiometric dating. The first sample (ID: Gobi 1C, Beta ID: 203719) consisted of about 40 grams of rope made from animal fibers. The rope sample was part of an approximately 140 gram rope associated with body 1C. The second sample (ID: Gobi 3A, Beta ID: 203720) included human skin tissue obtained from an approximately 1 year old infant. The sample weight was approximately 25 grams and derived from the infant's

abdominal area. The following results were received from Beta Analytical: Rope sample (Beta-203719): Conventional radiocarbon age: 470 +/-40 BP (where present is 1950), and the 2 Sigma calibrated result: Cal AD 1410 to 1470 (Cal BP 540 to 480). Skin sample (Beta-203720): Conventional radiocarbon age: 560 +/-40 BP (where present is 1950), and the 2 Sigma calibrated result: Cal AD 1300 to 1430 (Cal BP 640 to 520). In both cases the INTCAL 98 database was used for calibration. Thus using the 2 Sigma calibrated age, our samples range from AD 1300 to 1470 (Stuiver, 1998).

Logistics

A surveying team, including T. Amgalantugs, B. Erdene, N. Bazarsad., N. Batbold and B. Frohlich traveled to the southern Gobi to explore the cave. A one-car solution was selected in order to keep the transportation logistics to a minimum. This solution increased the potential danger of being stranded in a hazardous desert environment with no means of communication to the outside world. The problem was solved by working closely with units of the Mongolian Army's border patrol which operated within a few kilometers of our chosen routes and working area. Indeed, a small border patrol camp named 'Sulenkheer' was located three to four kilometers northwest of the cave. This relationship proved to be of exceptional value and we enjoyed the presence of members of the Border Patrol as well as the magnificent hospitality offered by its members and their families. Preparation started well ahead of the scheduled departure time. Naran Bazarsad, her two students (Erdene and Tugsuu), and N. Batbold prepared all necessary permits, including permission from the Mongolian Military authorities to operate in areas close to the Chinese border. Bruno Frohlich brought necessary surveying equipment, light sources, camera equipment and other field equipment from the Smithsonian Institution. Supplies for cave exploration, hiking and operating in rigorous desert conditions, and packing and shipping material were purchased in Ulaanbaatar. The project was designed to last seven days, not including the two days of driving approximately 900 km. each way between Ulaanbaatar and the Mongolian-Chinese border (Bazarsad et al., 2005).

The cave

On the midmorning of May 26 we arrived about 1.3 kilometers southeast of the cave and after a short exploration of the surrounding area, we established camp on a flat plateau 130 meters northeast of the cave. Our first priority was to establish the exact geographical location of the cave. Using our Ashtech-Magellan Locus GPS receivers, we obtained the following results: geodetic location: 42° 33' 33.75746' north latitude, and 108° 14' 57.85615' East longitude, and the ellipsoid elevation is 1,106.094 meters, all with a precision better than 5 cm. (Frohlich et al., 2004) The cave was entered on the first attempt by Natsag Batbold and Naran Bazarsad. The presence of human remains was verified and the cave's general layout and entrance system were noted. The cave consists of a subterranean space

accessed through a small circular opening and several tunnels that are separated by platforms (Fig. 1). The cave's circular opening, approximately 0.9 x 0.6 meter, leads to two platforms that are connected by three tunnels. The first platform is located 2.4 meters below the entrance. From the first platform, a 4.2 meters long vertical tunnel connects the first and second platform. From the second platform a 2.4 meter long tunnel with a slope of about 45° extends toward the entrance of the cave chamber (Fig. 1). The cave is oriented in an approximately west to east direction and has a maximum length of 16.8 meters. The cave's maximum width, of 5.9 meters, is at the western end and the width adjacent to the entrance is about 3 meters (Fig. 2). The maximum height, found at the central and western end of the cave, is 3.4 meters (Fig. 1).

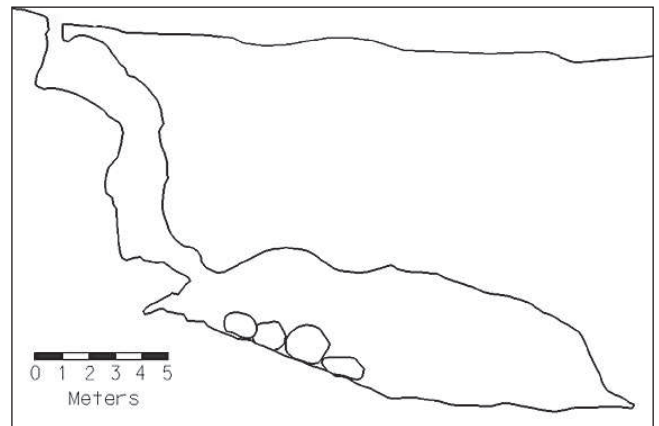


Fig. 1 - Lateral view of the Hets Mountain Cave. Lowest point of cave is approximately 13.5 meters below the surface.

Human remains were found in three areas or groupings (Fig. 2). Two of the groups included concentrated remains of complete bodies, most of them still in their original position and location. Most of the bodies were well preserved, with the majority of skeletal tissue present and 10% to 80% of the soft tissue still intact. The soft tissue's excellent preservation appears to have been produced by a rapid process of natural mummification, leaving all body parts in their original position and location. However, it was evident that the remains had been disturbed by later visitors to the cave and in some cases, body parts had been removed and relocated within the cave.

We noted recent destruction of the cave's contents and some forceful removal of human body parts, including several heads. Therefore we decided that the human remains should be removed and transported to the Institute of Archaeology in Ulaanbaatar. During our stay at the cave we focused on the following objectives: (1) architectural and geological description of cave and cave access; (2) description of the human remains in their 'in-situ' positions; (3) collection of tissue samples for dating and other analytical purposes; (4) completion of test excavations; (5) preparation of remains for transportation to Ulaanbaatar; and (6) description of geological features surrounding the cave. Several groups of human bodies and body parts were identified (Fig. 2). For some of the disarticulated remains their original positions could not be ascertained. In one of the

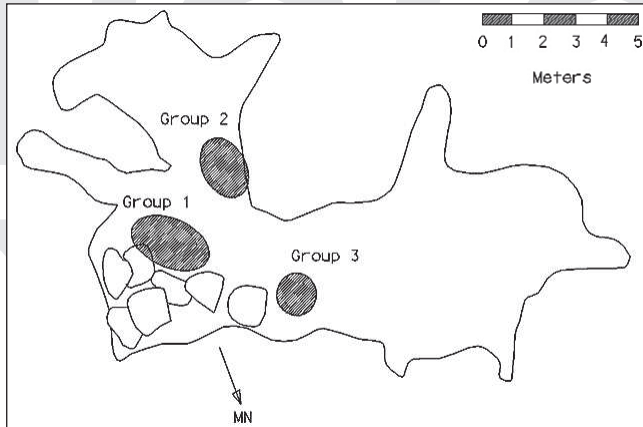


Fig. 2 - Horizontal view of cave. Maximum length of cave is 16.8 meters (east to west direction) and a maximum width of 5.9 meters at the western end. Three groups or concentrations of human remains are found in the eastern end.

major bundles (Group 1) we found seven articulated and partly articulated bodies stacked on top of each other (Fig. 3). One body seemed to be in a sitting position but with the head and some of the extremities missing. This body could be the one previously reported by N. Ser-Odjav as a sitting woman embracing an infant. However, we did not identify or find the reported infant. The remaining six bodies had previously been stacked in a heap, suggesting a quick disposal of the remains without ritual (Fig. 3). Ligaments on the individuals were all well preserved and in some cases muscle, skin, intestinal tissue, nails, and hair were present. However, of the seven bodies only three included heads (Tab. 1). A careful search for the missing cranial/skull material did not yield any results. It is hypothesized that some of the remains, especially the heads, had been removed during previous visits to the cave over the last few decades. The seven bodies represented four males ranging from 12 years to 40+ years old, two adult females, and one child of unknown sex (Tab. 1). Three articulated bodies (Group 3), all infants under one year



Fig. 3 - Central view of human remains in the Group 1 area. A maximum of seven bodies were identified, including four adults (two females and two males), and three sub-adults (two males and one with unknown sex).

of age, were found about five meters from the group of the bodies described above (Fig. 2). Their preservation was excellent, particularly the soft tissue in the thoracic and abdominal regions. This includes the colons and some of the smaller intestines all in very good condition. However, none of the bodies included a head.

ID	SEX	AGE	CAUSE OF DEATH	CRANIUM
I.A	Female	Adult	Unknown	No
I.B	Male	16 yrs	Unknown	No
I.C	n/d	8 yrs	Unknown	Yes
I.D	Female	40 yrs	Strangulation	Yes
I.E	Male	40 yrs	Strangulation	Yes
I.F	Male	12 yrs	Unknown	No
I.G	Male	Adult	Unknown	No
3.A	n/d	1.0 yr	Unknown	No
3.B	n/d	1.0 yr	Strangulation	No
3.C	n/d	0.5 yr	Strangulation	No

Tab. 1 - Summary of finds of human remains in the Hets Mountain Cave, Gobi Desert.

Various body parts and individual bones were found in several other places. One child's cranium was located in a small alcove about 1.7 meters above the cave's floor. This anomaly may be the result of recent trespassing. Intriguingly, a single human innominate bone with a white surface color was also found. Such light coloration is an indication of exposure to direct sun light for a period of days or even weeks. As all of the material found within the cave is brownish, indicating preservation solely within the enclosed cave environment, the presence of this white colored bone present an anomaly which at this time cannot be entirely explained.

We were able to determine the cause of death for all individuals with preserved cranial and/or cervical tissue. In general, we have found that the majority of the bodies represents individuals who had been killed by hanging, strangulation or other causes pertinent to the application of traumatic forces to the head and neck regions. In three cases, a rope was still tightly wrapped around the cervical areas suggesting strangulation. In the case of a 40 year old female, severe trauma to the neck had dislocated some of the cervical vertebrae, and the mandible had been forced out of its articulation with the temporal bones. Deep indentation in the posterior neck tissue around the 4th cervical vertebrae suggests the use of a solid and strong bar made from wood or a metallic material (Fig. 4). The woman's upper body and the neck must have been in a fixed position while the head was forcefully pulled in a posterior direction, causing the observed trauma in the cervical vertebrae and in the temporo-mandibular joints. Also, the high quality of preservation revealed a cut in her tongue's anterior part caused by a forceful closure of the mouth and resulting in dismemberment of the distal tip of her tongue. The cut appears to follow the shape of the maxillary and mandibular dental arches. In three other individuals, rope or rope fragments associated with deep indentation in the neck skin

tissue suggests forceful strangulation. The present direct diagnoses are based on the observation of external surface lesions and do not include potential lesions in internal tissue.



Fig. 4 - Upper torso and head of 40 year old female with fractured cervical vertebrae, dislocated mandible, and dismembered tongue tissue.

We are presently observing and studying internal lesions using diagnostic equipment including x-ray and computed tomography (CT).

Planned research

We are now faced with the intricate task of planning, securing and executing the ongoing research, and to achieve relevant and accurate reconstructions of the events leading to this horrendous incident. The forensic reconstruction of the cave contents will be arduous, hampered partially by the difficulties of studying the remains in situ and by alteration, destruction, and removal of the remains in recent decades.

The analytical phase has been initiated and we have obtained our first radiometric dates derived from rope and skin tissue samples with dates between AD 1300 to 1470 (2 Sigma calibrated). This dating corresponding to the end of the Great Mongolian Empire (AD 1206 to AD 1368) contextualize them into a period of volatile cultural change and crisis (Grousset, 2002). This allows us to begin focusing our research on well defined objectives, including the reconstruction of diet and an estimation of the nutritional status. There are several reasons for this approach. For example, the historical record suggests that Mongolian population groups suffered profound malnutrition during the Yuan Dynasty (AD 1279 to 1368) most likely caused by increased demands on Mongolian resources (Endicott, 2005). The Mongolian Yuan administration's relocation in AD 1264 to present day Beijing and the subsequent switch toward a sedentary behavior resulted in an economic, cultural, and geographical disconnect with the nomadic base population (Endicott, 2005; Grousset, 2002). The nomadic base population plunged into a crisis for the duration of the Yuan dynasty, and most likely for a substantial number of years after the fall of

the Yuan dynasty in AD 1368; the year which epitomize the end of the Great Mongolian Empire. Records indicate widespread, continuing and aggravating poverty and starvation among Mongolian soldiers and herdsman. Indeed, the Yuan administration in Beijing was forced to export grain to starving Mongolian groups, enforce laws on group relocation, and legally limit the rapidly increasing child slave trade created by individual family's desperate attempts to avoid starvation and other hardships (Endicott, 2005). Finally, we have decided to use this project as a further tool to promote and enhance our scientific and educational collaborations between the Smithsonian Institution and the Mongolian Academy of Sciences. We intend to use all available facilities within our own organizations to enhance our understanding of the data. Also, when required we will collaborate with other experts on the interpretation of the information. Smithsonian Institution (National Museum of Natural History) has made funds available for shipping the remains to the Smithsonian for further analysis and at the same time ensured support for Mongolian scientists and students to be part of this experience. In addition to Mongolian and American anthropologists, the research team will include radiologists, pathologists, anatomists, and forensic scientists who we have collaborated with on many other projects. And most importantly, we want to include students, interns, volunteers and other researchers in our studies and discussions making this not only a truly multi-disciplinary research project but also a wonderful educational experience.

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