



Diet and death in times of war: isotopic and osteological analysis of mummified human remains from southern Mongolia

Bethany L. Turner^{a,*,1}, Molly K. Zuckerman^{b,1}, Evan M. Garofalo^c, Andrew Wilson^d, George D. Kamenov^e, David R. Hunt^f, Tsend Amgalantugs^g, Bruno Frohlich^f

^a Department of Anthropology, Georgia State University, PO Box 3998, Atlanta, GA 30302, USA

^b Department of Anthropology and Middle Eastern Studies, Mississippi State University, Starkville, MS 39762, USA

^c The Center for Functional Anatomy and Evolution, Johns Hopkins University, Baltimore, MD 21205, USA

^d Division of Archaeological, Geographical and Environmental Sciences, University of Bradford, West Yorkshire, BD7 1DP, UK

^e Department of Geological Sciences, University of Florida, Gainesville, FL 32611, USA

^f Department of Physical Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, DC 20004, USA

^g Institute of Archaeology, Mongolian Academy of Sciences, Ulaanbaatar-51, Mongolia

ARTICLE INFO

Article history:

Received 26 February 2012

Received in revised form

21 April 2012

Accepted 25 April 2012

Keywords:

Isotopes

Diet

Mobility

Trauma

Mongolia

Bioarchaeology

ABSTRACT

This study presents the results of an isotopic analysis of nine naturally mummified individuals—three adults, two adolescents, one juvenile, and three infants—recovered from the Hets Mountain Cave site in southern Mongolia, where they had been secondarily deposited. All of the individuals show evidence of violent perimortem trauma, but no skeletal indicators of nutritional or disease-related stress. Multi-isotopic data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{18}\text{O}$, $^{87}\text{Sr}/^{86}\text{Sr}$, and $^{20n}\text{Pb}/^{204}\text{Pb}$) were characterized in multiple tissues from each individual when possible, in order to reconstruct diet composition and residential origin at different points in life. Specifically, $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in bone carbonate and collagen ($N = 8$) and hair keratin ($N = 4$) were coupled with enamel carbonate $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ ($N = 3$) and enamel $^{87}\text{Sr}/^{86}\text{Sr}$, and $^{20n}\text{Pb}/^{204}\text{Pb}$ ($N = 3$) to assess diet and residential mobility in relation to skeletal indicators of health and trauma. Results are consistent with a persistence of mixed C_3/C_4 pastoral subsistence and general stability of diet composition over the life course, in contrast to contemporary accounts of widespread famine and a dependence on grains imported from China throughout the region. However, results also suggest that at least some individuals may have migrated to this region of southern Mongolia from elsewhere during life, meaning that their dietary isotopic profiles may not represent local subsistence patterns near the Hets Mountain Cave site. Overall, these results speak to the utility of life course oriented multi-isotopic analysis in complementing more top-down historical analyses in understanding variation in subsistence, nutrition, and migration in regions undergoing significant political and economic turmoil.

© 2012 Elsevier Ltd. All rights reserved.

1. Introduction

Diet is a fundamental aspect of everyday life; it is also a key area of intersection between political economy, ecology, and physiological well-being. Accurately mapping dietary characteristics in ancient populations, not only across cultures and time periods but also within small groups and individual life spans, therefore opens

an essential window to better understand larger cultural processes. Particularly in ancient settings of instability, social upheaval, and violence, estimating continuity or change in subsistence patterns can inform larger historical narratives by providing more localized reconstructions of how these periods of flux affected groups in different locales.

One context in which examining dietary patterns may provide insights into articulations between local groups and larger political and economic structures is in the Gobi region of medieval Mongolia. The Ming Dynasty (AD 1368–1644) in eastern and central Asia was a period of widespread poverty and famine, intermittent conflict, and political upheaval. Documentary sources indicate an erosion of traditional pastoralist economies in present-day Mongolia during the preceding Yüan Dynasty (AD 1271–1368), which was exacerbated by climate change. This resulted in

* Corresponding author. Tel.: +1 (0)11 404 413 5162 (office); fax: +1 (0)11 404 413 5159.

E-mail addresses: antblt@langate.gsu.edu, btturnerlivermore@gsu.edu (B.L. Turner), mzk12@msstate.edu (M.K. Zuckerman), evan@jhmi.edu (E.M. Garofalo), A.S.Wilson2@Bradford.ac.uk (A. Wilson), kamenov@ufl.edu (G.D. Kamenov), tugsuu_ts2001@yahoo.com (T. Amgalantugs), frohlich@si.edu (B. Frohlich).

¹ These authors contributed equally to this work.

widespread famine and geographical displacement of pastoral groups throughout the 14th century (Munkuev, 1977; Endicott, 2005). These famines were partially stemmed by imported Chinese agricultural products, primarily grains. However, by the late 14th century, factional struggle, civil war, and high levels of localized conflict culminated in the overthrow of Mongolian control of China and the onset of the Ming Dynasty (Morgan, 1986). Periodic nutritional stress and famine among Mongolian and Chinese populations, and intermittent conflict both within Mongolia and between Chinese and Mongolian groups, persisted throughout the Ming (Lattimore, 1988).

This study presents isotopic and preliminary skeletal data reflecting diet, residence, and to a lesser degree, trauma, pathology, and physiological stress in an assemblage of nine naturally mummified individuals recovered from the Hets Mountain cave site—e.g., *Huns Agui* (Human Cave) or *Hets Agui* (Hard Cave)—in the southern Mongolian Gobi desert (Fig. 1). The assemblage had been a longstanding, macabre attraction for regional tourism and has suffered from the attention; many of the individuals are incomplete, having lost appendages and crania to trophy seekers. It was recovered for conservation purposes in 2004 by a joint team from the Mongolian Academy of Sciences and the Smithsonian Institution National Museum of Natural History (NMNH). The assemblage includes three adults, two adolescents, one juvenile, and three infants (see Table 1). All show macroscopic evidence of violent death, either by strangulation, hanging, or application of traumatic forces to the neck; several individuals were recovered with garroting cords still *in situ*, while another individual involuntarily severed her own tongue coincident with the cervical trauma (Fig. 2). Three individuals have been radiocarbon dated (Table 1), each to cal. yr. AD 1434–1651 (Beta-Analytical and NSF-Arizona

AMS Laboratory), which overlaps the Ming (AD 1368–1644) and early Qing (1644–1911) dynasties and the end of the Great Mongolian Empire (Frohlich et al., 2008).

Despite historical accounts of widespread famine and deprivation, preliminary examination of the mummified individuals from Hets Mountain Cave reveals no indicators of nutritional stress (Frohlich et al., 2009), which suggests that the famine & deprivation may not have been ubiquitous throughout the region. Their shared date range and preliminary mtDNA analysis, which suggests a shared relationship between several of the individuals, indicates that the assemblage was not a random grouping and were likely deposited in the same time period. Further, their shared patterns of severe lethal trauma (Table 1), and their secondary deposition in the cave after death and desiccation, which likely occurred in a different location, along with the absence of any evidence of ritualized mortuary, is conspicuously inconsistent with typical mortuary practices and other contemporary Mongolian pastoral burials in the Gobi. Together, these raise questions about the identity and the role they may have played within local and state-level conflicts and population displacement. Therefore, estimating the residential origin and diet of these individuals would also permit some examination of the varying impacts of larger political and economic turmoil in this particular hinterland context.

To accomplish this, isotopic ratios were characterized in multiple preserved tissue types to reconstruct diet, dietary change during life, and residential origin, where possible. Values for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ were assessed in preserved bone ($N = 8$) and hair ($N = 4$) to estimate the proportions of agriculturally-derived vs. animal-based contributions to the diet. These were also employed to examine dietary change at different stages of the life course, such as a shift from animal-based to agricultural resources in a context of

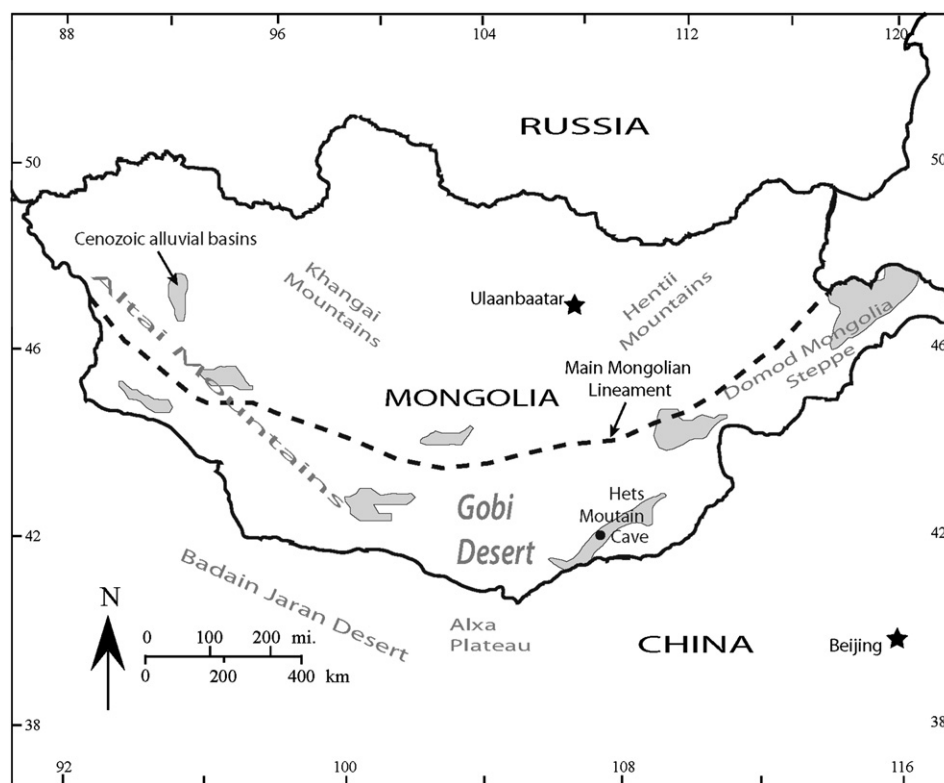


Fig. 1. Map of the Hets Mountain Cave location and surrounding region, including key geological and ecological areas. Also includes the locations of sites near Hets Mountain Cave where archaeological rodent enamel was collected for Sr and Pb isotopic characterization. The geodetic location of the Hets Mountain Cave site is 42°33′.75746′ North latitude, 108°14′57.85615′ East longitude, at an elevation of 1,106.09 m above sea level.

Download English Version:

<https://daneshyari.com/en/article/10499191>

Download Persian Version:

<https://daneshyari.com/article/10499191>

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