

**New research  
reveals one of the  
earliest  
archaeological  
examples of a  
metastatic cancer**

*Under embargo until 23.30 hours (BST) Monday 25<sup>th</sup> July*

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A paper launched today (*Tuesday 26<sup>th</sup> July*) in the journal *The Lancet - Oncology* entitled *Early evidence for cancer in Sudan: an advanced example of bone metastases from ancient Nubia c. 2500-2050 BC*, reveals the results of new research undertaken by the British Museum focusing on human remains from the *Kerma Ancien* culture (2500-2050BC), ancient Sudan. The paper is authored by researchers from the British Museum's Department of Egypt and Sudan and the Department of Scientific Research, as well as the Department of Anthropology and Archaeology at Liverpool John Moores University. The research was supported by the Wellcome Trust and the Institute for Bioarchaeology.

Excavated from a *Kerma Ancien* cemetery dated to c. 2500-2050 BC, this probable male only has 30% of his skeleton preserved and is the earliest confirmed example of a metastatic-like cancer (i.e. a cancer that has spread from one tissue to another) reported from Ancient Sudan, and most probably Nubia, by over 1000 years.

Using x-ray facilities at the Museum, the team were able to identify 27 lesion clusters and found evidence of them on the ribs and spine while the hip bones in particular showed extensive changes. This early example adds to a steadily increasing body of evidence on the epidemiology of cancer, providing further insights into cancer's considerable antiquity.

**Dr Rebecca Whiting**, Lead Researcher, and Project Curator for Bioarchaeology said 'Cancer has, in the past, been regarded as a modern disease, and each new archaeological example adds to an important body of evidence that further reveals cancer's considerable antiquity. This will

hopefully contribute to our better understanding of the evolution of cancer in the past, as well as in modern times.'

**Dr Daniel Antoine**, Keeper of the Department of Egypt and Sudan, and Curator of Bioarchaeology at the British Museum said 'Several soft tissue tumour have a propensity to spread to the skeleton including breast, prostate and lung cancers. As the skeleton is all that remains, the location of the primary tumour cannot be determined without the soft tissue evidence. The presence of numerous irregular bone forming and bone destroying lesions are most in keeping with a metastatic cancer-induced bone response, probably a metastatic carcinoma.'

Various axial lesions were examined using radiographic analysis combined with clinical and palaeopathological techniques. Computed radiography was conducted at the facilities of the Department of Scientific Research at the British Museum.

Overall, 27 lesion clusters could be identified with a diverse range of appearances: thinning patches of bone, spicules and prolific patches of new bone, as well as holes linked to larger cavities below the surface on radiographs.

The appearance of these lesions allowed the team to narrow down the possible diseases or conditions that may have caused them. The differential diagnosis suggests that the presence of numerous irregular osteolytic and osteoblastic lesions are most in keeping with a metastatic cancer-induced bone response, probably resulting from a carcinoma, although other malignant neoplasms could cause similar lesions.

With the exception of a benign button osteoma, none of the other 22 adults in the cemetery displayed signs of neoplastic disease. Further assessment of remains from similar time periods and cultures will hopefully increase our understanding of the prevalence of neoplastic diseases in these early agropastoral populations, and how they compare to other groups regionally and worldwide.

Several archaeological examples of metastatic carcinomas have previously been reported from Ancient Nubia, with the oldest confirmed example dating from 1187-1064BC. The individual described here pushes back the history of metastatic neoplastic disease in Sudan, and most probably in Nubia, by over 1000 years. This early example adds to a steadily increasing body of evidence and provides further insights into cancer's considerable antiquity.

**Further information**

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The paper will be freely available online at: <http://nature.com/articles/s41598-021-89386-y>



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