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Micromorphology of two prehistoric ritual burials from Yemen, and considerations on methodological aspects of sampling the burial matrix - work in progress

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Introduction

In the central area of Yemen, two burial sites placed high in the crevices of vertical cliff face of Cretaceous sandstone (Tawilah Group) provided evidence of human remains and yielded burial soils. Radiocarbon dating indicated c.2500-2900 years BP for the burials. In other local comparable sites the deep horizontal crevices yielded Bronze Age human remains, in exceptional state of preservation

Questions:
What was the nature of the burial matrix? Are other human influences superimposed on the soils derived from it? Is it simply decomposed crevice rock, scraped together at the time of burial, or the result of a more complex burial practice? Such questions are also relevant to a variety of other burials of different periods and world regions.

Methods
Seven matrix samples from Cliff Burials (A) Talan (Layers 4,10,12,14,18,20 and 22, from top to bottom) and (B) Shiban Kawkaban (Layer 1 and 9) were analysed with micromorphology, supplemented by SEM microprobe, X-ray diffraction, gas chromatography/mass spectrometry.

Results

Cliff Burial Site Talan. The presence of cholesterol was confirmed in the lower sample. The second layer contained darker earth with fibrous plant material. A hard calcareous upper capping contrasted with the other levels of matrix, and it displayed a highly birefingent material with a significant component of uric acid. The other levels had variable organic content and plant inclusions, and possibly pollen. In Layer 10, aromatic acids indicative of balsam and sugar markers suggested plant gum. Cholesterol was the major sterol in Layers 10 and 22, but whilst in Layer 10 its oxidation products were present and cholestanol was abundant as normally in soils, it was only a minor component of Layer 22 where, rather, a significant amount of coprostanol indicated faecal input, and cholesterol oxidation products were absent.

Cliff Burial Site Shiban Kawkaban. Although no stratification was visible to the naked eye, variation was observed at a micromorphological level. Layer 1 included mineral, bone, plant and soil-like fragments, with leaf and woody tissue, including vascular parts and seeds. Layer 9 included plant tissue, hair, seeds and some fly puparia.

Comments

Layering of the burial matrix in the Yemeni burials was unexpected and the burial matrix in one case was very clearly not the result of natural soil forming processes within the rock crevice.

In Burial Site A the hard upper capping contained uric acid-rich deposits embedding organic tissue. This sample could possibly represent an intentional 'plaster layer' including plant, hair and seed fragments.

The abundant cholesterol confirms an animal/human origin within the matrix of Layers 10 and 22, and the stanol and bile acid distributions unequivocally confirm a human origin, despite the lack of any physical human remains.

Microprobe analysis indicated that the hard cup of Burial 1 contained K, Si, Al, Cu, Mg, S, Fe and Na with amounts fluctuating relatively to depth. No special significance can be placed on the differences.

This study calls attention to a neglected aspect of burial archaeology: grave infillings can no longer be assumed to be simply the return of material removed for the burial, but may be influenced by other factors. Through micromorphology, decomposed wood, shroud or other textiles or skins and hair can be detected and, if local rituals influenced the way materials were returned into the grave, then this also deserves investigation.

A new ERC-funded project (Title: "Interred with their bones", acronym: "InterArChive") tackles these issues (please see separate poster).

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