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TWO BURIALS FROM CEMETERY A IN NAQLUN: ARCHEOLOGICAL AND ANTHROPOLOGICAL REMARKS

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Abstract: Burials T.500 and T.501, constituting a part of the medieval Christian Cemetery A in Naqlun, were found in a pit dug into the monastic refuse dump on site B at the southern fringe of the monastic compound. Anthropological analysis identified two adult burials side by side, a male in a coffin, the skeleton accompanied by a number of objects, as well as a selection of dried fruit, and a female interred on a bier of palm leaf ribs. The woman's skeletal remains showed significant pathological changes.

Keywords: Naqlun, Cemetery A, medieval Christian burials, anthropological analysis, pathological changes, STI index

Burials T.500 and T.501 were found in a burial pit approximately 1.60 m deep, dug in the floor of room B.26 (for the context of the find, see Derda, Dzierzbicka 2012, in this volume) [*Fig. 1*]. The two burials

were oriented east–west and lay side by side at the same elevation, T.500 to the north of T.501. Human skeletal remains from at least two other, destroyed burials were found in the excavated layers.

ARCHAEOLOGICAL EXPLORATION OF THE BURIALS

BURIAL T.500

T.500 was a burial of a man aged 30–40 years (for anthropological remarks on the two skeletons, see below). The body was buried in a coffin (L. 1.80 m, W. 0.40–0.46 m) assembled of planks of palm wood using iron nails. The coffin was tied with ropes of palm fibers and covered with a mat [*Fig. 2*]. Found above it were two baskets placed

on the burial at its western end, as well as an incomplete glass flask and an iron ring. Beneath the coffin were a complete glass flask [*Fig. 3, left*] and a fragment of a mat, as well as remains of two glass bottles. The skeletal remains of T.500 measured 165 cm in length. The body was placed flat on the back, with the left hand along the body and the right hand beneath the pelvis. The head

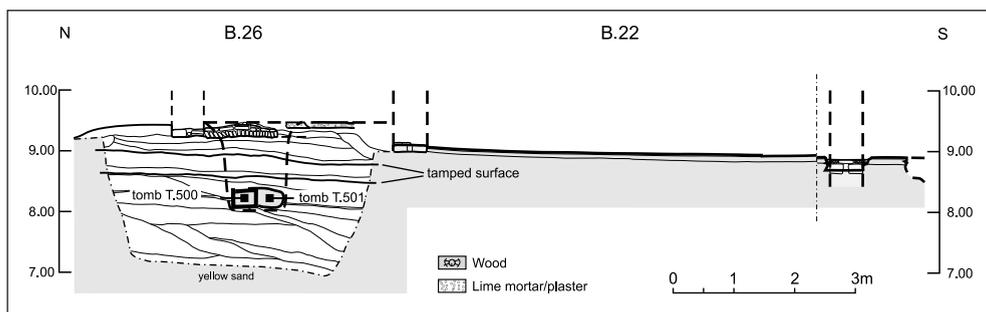


Fig. 1. Cross-section N-S through structures in Sector B, showing the position of the two graves (Drawing S. Maślak, PCMA archives)



Fig. 2. Burials T.500 (wooden coffin) and T.501, view from the north (top) and south (bottom) (Photos W. Godlewski, PCMA archives)

rested on a pillow stuffed with twigs and was slightly turned to the left.

The body of T.500 was wrapped in a shroud tied with a leather string at the waistline, with a metal ring attached to the knot on the string. The deceased was dressed in two tunics and additionally bound with a long shawl, which was wrapped around the head and tied above the ankles. The external burial tunic had an Arabic pseudo-inscription on the right sleeve above the elbow.¹ The second tunic was made of linen. It had long sleeves and the left sleeve was tied in a knot. Found inside it, near the hand of the deceased,

was a bundle of vegetal fibers containing remains of fruit:² an apple (*Malus sp.*), two peaches (*Prunus persica*), an almond (*Prunus amygdalus*), grapes (*Vitis vinifera*), etc.), as well as an Arabic text on paper. A nearly complete glass vessel [Fig. 3, right] and dried fruit (*Diospyros lotus*) were found under the shroud in the shoulder area. In the right sleeve near the hand there were also remains of fruit: four citrus fruits (*Citrus sp.*) and one each of pomegranate (*Punica granatum*), peach (*Prunus persica*) and fig (*Ficus carica*). A comb of olive wood [Fig. 4] lay inserted between the shawl and the burial tunic.



Fig. 3. Glass vessels from burial T.500: flask found beneath the coffin of T.500 and cup wrapped in the shroud (Photos W. Godlewski, PCMA archives)

¹ The textiles found in T.500 and T.501 will be examined by the team's textile specialist Barbara Czaja-Szewczak.

² Plant remains were identified by archaeobotanist Assoc. Prof. Jarosław Zieliński (Szczecin Agricultural Academy).

BURIAL T.501

T.501 was a burial of a woman aged 40–50 years. The body was laid flat on the back, on a bier of palm ribs 1.85 m in length, wrapped in a mat [see *Fig. 2*, bottom].

Supports of palm ribs were placed vertically on both sides of the head. The length of the skeletal remains in anatomical layout was 1.55 m. The body was wrapped in a linen shroud bound with rope of vegetal fiber. A layer of twigs was inserted between the shroud and the burial tunic. The deceased was dressed in two tunics and the external burial tunic bore pseudo-inscriptions. A shawl was draped around the neck and the head rested on a pillow stuffed with plants.

REMAINS OF OTHER BURIALS

The burial pit for T.500 and T.501 was apparently not the only disturbance

in the stratigraphy of the dump beneath room B.26. Relics of other burials, possibly earlier ones, encountered during exploration included human bones: complete left tibia, incomplete right shoulder bone, two left pelvis bones (one incomplete), an incomplete sacrum bone, two rib fragments, the first left rib, right collarbone, a thoracic vertebra, probably T8 or T9, and three lumbar vertebrae L3–L5. The bones came from at least two individuals and based on the pelvis bones it was possible to determine the age of two of them as 40–44 and 27–34 years. Both pelvis bones belonged to males. The exploration of layers I–V in B.26 also yielded material that may have been related to these burials, that is, fragments of textiles, footwear and other leather objects, baskets and mats.



Fig. 4. Comb of olive wood; left, the comb placed between the shawl binding the body and the outer burial tunic (Photos W. Godlewski, PCMA archives)

METHODOLOGY OF ANTHROPOLOGICAL RESEARCH

Thorough anthropological analyses of the two burials at issue comprised the condition of soft tissues, osseous tissues and paleopathological changes. The osteometry and skeleton description aimed at recording the state and morphology of the bones, the age and sex of the deceased (Buikstra, Ubelaker 1994) and pathological changes including diseases of the dentition and periodontium (Ortner 2003).

On-site autopsy followed A.C. Aufderheide's method of documenting soft tissues (e.g. hair, beard, ears, eyes, nose, penis, nails) and internal organs (i.e., heart, lungs, liver, spleen, kidneys, esophagus, stomach, small intestines, colon, rectum, bladder, prostate, ovaries, uterus and brain). Soft tissue preservation relative to osseous material (STI index) was estimated for each individual using a six-grade scale

where 0 stands for not preserved and 5 for fully preserved soft tissues or bones. In this method, a maximum of 25 points can be assigned for the categories: head, chest, abdomen and both arms and legs. This was easily expressed in percentages; suffice it to multiply the sum total of particular categories by four to receive 100 percent of B (bone) or ST (soft tissue). The soft tissue index (STI) was calculated from the ratio of soft tissues ST to preserved bones B according to the formula: $STI = ST/B$. (Aufderheide *et alii* 1992; Aufderheide 2004: 335). Data were recorded in a mummy autopsy protocol prepared by Marvin Allison and applied at the Laboratory of the University of Minnesota Duluth School of Medicine (Aufderheide 2004: 331–334). Standard recording of this kind will permit future comparison of data from different sites.

ANTHROPOLOGICAL REMARKS ON THE BURIALS

MALE BURIAL (T.500)

A male³ aged 30–40 years⁴ was buried in a wooden coffin, supine, the left arm by the body, the right hand pressed under a buttock. The body was wrapped in a shroud and tied with a shawl placed around the neck, crossing forward over the chest and abdomen, then crossing under, below the middle of the thighs, to be tied in a simple knot in front, over the shins [Fig. 5, top]. Body length measured *in situ*

was 165 cm. The live height of the man, calculated from the length of his long bones, was approximately 165 cm (Raxter *et alii* 2008).

The skeleton was preserved almost complete in very good condition. A thorough paleopathological analysis was carried out on the teeth and bones. Insignificant changes were noted on the surfaces of the rib joints, thoracic vertebrae T9–T11 on the right side. There were

³ Identified on the basis of the following: *margo supraorbitalis*, *processus mastoideus*, *protuberantia mentalis*, *mandibula*, *os coxae*, *incisura ischiadica major*.

⁴ Identified on the basis of the following: *suturae cranii*, *facies auricularis*, *facies symphysialis*, *dentes*.

obvious changes on the distal digits of the first toes, both right and left foot, in the area of the proximal joint surface and two-thirds of the shaft on the side of the sole. The changes represented growth within the interdigit joints. The absence of any other changes in the backbone and remaining joints indicated no serious joint disease. Slight degenerative changes in the left talus joint, observed on the talus bone joint surface and heel suggest trauma, such as dislocation of the joint (sprained

ankle). There was no paleopathology of the dentition and periodontium. The man had lost the right upper second premolar during life; his dentition displayed slight parodontosis (0–1 degree), as well as an insignificant amount of calculus.

Tissue preservation on the post-cranial skeleton and cranium was determined as low. Skin was preserved only at knee and thigh level (approximately 30%) and a large fragment on the left tibia; practically no trace remained on the facial skeleton.

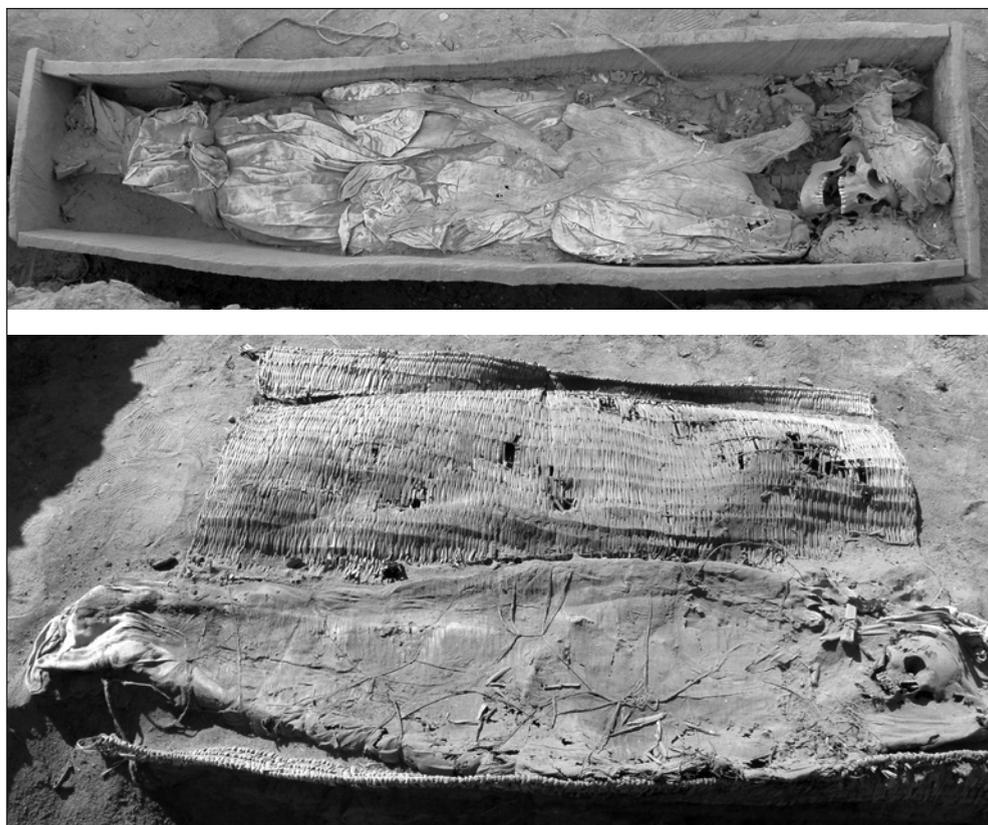


Fig. 5. Bodies viewed in the burial clothes: burial T.500 (top), note the use of a shawl to keep the inner shroud wrapping in place; burial T.501, shrouded body deposited on a mat which had also covered the burial on top, view after lifting the mat (Photos W. Godlewski)

A lock of hair, presumed to be from a beard, was preserved by the right shoulder. The only preserved internal organ noted during the examination was the mummified brain. The mummification coefficient for this individual stands at $STI=0.1$ with skeleton state of preservation 98% and tissue preservation 10%.

Samples were taken of the hair from the head and the lock by the shoulder, tissue from the limbs and dust from inside the thoracic cavity for bacteriological and histopathological examination, and one rib secured for future aDNA analysis. Caution was exercised to avoid any contamination of the samples. Bacteriological analyses made in cooperation with the Damian Medical Center in Warsaw demonstrated the presence of *Kocuria rosea*, *Micrococcus luteus*, *Bacillus* species in the samples of dust from the thoracic cavity.

FEMALE BURIAL (T.501)

The woman⁵ buried in grave T.501 was aged 40–50 (45 ± 10).⁶ The grave adjoined burial T.500 directly on the south. The body had been deposited on a bier of palm ribs (*jarids*). It rested supine, arms by the sides, on a mat, the southern side of which had been turned up over the body [Fig. 5, bottom]. Body length measured in the grave was 155 cm. Life stature calculated from long bone measurement was also about 155 cm (Raxter *et alii* 2008).

The skeleton was preserved almost complete in very good condition. A paleopathological analysis of the bones revealed numerous extensive lesions on the whole length of the backbone, the

biggest in the parts of the neck and lower back. Osteophytosis was considerable, compression of vertebrae was slight. Impressions of Schmorl's tubercles/protuberances were observed on the surface of the loin vertebral shafts. Distinctly bigger anomalies were discovered in the lower part of the cervical backbone and on tooth C2 (axis) (Ortner 2003: 557). Compression of the first thoracic vertebra was also distinct, pointing perhaps to a lifetime of carrying heavy loads on the head. Changes were also noted in the hip joints on the lunate surface and at the edge of the socket of the left pelvic bone. Insignificant degeneration could be observed also on the auricular surface and the promontorium, the shoulder surfaces of the shoulder bones, by the left humeral trochlea, on the joint surfaces of the proximal ends of the tibia, the patella surfaces of thigh bones and the patella. More significant degeneration occurred on the feet, especially in the area of interdigit joints. It must have been the cause of partial or complete stiffness of the joints. The changes and their positioning attested bone and joint inflammation suffered in life (osteoarthritis) (Ortner 2003: 547–558). The condition of the bones and backbone overall suggested osteoporosis.

Evidence of serious health problems were observed also on the skull, dentition and periodontium. The woman had advanced parodontosis, cavities and extensive calculi, as well as tooth loss. She must have suffered from abscesses (Ortner 2003: 592–593) with fistulae in the place of the upper left molars. Chronic inflammation of the oral

⁵ Identified on the basis of the following: *margo supraorbitalis*, *processus mastoideus*, *protuberantia mentalis*, *mandibula*, *os coxae*, *incisura ischiadica major*.

⁶ Identified on the basis of the following: *suturae cranii*, *facies auricularis*, *facies symphysialis*, *dentes*.

cavity could have even led to death. Small changes around the external aural opening may attest infections of both ears (*otitis media*).

Mummified soft tissue was limited to some skin with hair on the occiput and left temple. The hair was preserved in good condition as a braid 28 cm long [Fig. 6]. Tissues and skin on the postcranial skeleton were preserved in good condition on the right side of the body: chest, shoulder, arm, and a completely mummified hand. Mummified tissue on the left arm was observed in the vicinity of the shoulder joint and proximal part of the arm. Spontaneously mummified tissue was observed in the pelvic area, as well as on the back and rear side of the pelvis (approximately 60%). Tissue

had been preserved also on the right leg, especially on the back of the thigh. On the left leg the only preserved tissue was in the area of the ankle joint.

During the examination, the following internal organs, besides the brain, were identified on the basis of their anatomical position: liver, heart, and probably fragments of lungs.

A detailed analysis of the state of preservation of the body gave a mean STI=0.41 with the skeleton estimated at 99% and all tissues at 41%. Samples were taken of the hair including skin on the head, tissues and dust for culturing and histopathological analyses, as well as a rib for aDNA analysis. Remains of internal organs and the braid were preserved for further examination. bacteriological



Fig. 6. Burial T.501, close-up of braided hair
(Photo W. Godlewski)

analysis of three samples revealed the presence of *Micrococcus luteus* on rib tissue, *Bacillus* species in the earth from under

the body and fragments of pelvic tissue, the latter sample also recording *Aspergillus niger*.

OTHER ANTHROPOLOGICAL EXAMINATIONS

Samples of tissues, organs and bones from spontaneously preserved bodies found in Cemetery A, as well as insects found with the bodies, were collected, in order to build a database of samples for broad-scale research on state of preservation of human remains in the archaeological record and histopathological as well as a DNA analyses in the future (assuming a more relevant sample is collected).

Cooperation with the Damian Medical Center established the kinds of fungi and bacteria growing on spontaneously mummified remains [Table 1]. The results of these analyses will be used in determining the correlation between tissue preservation and the fungi and bacteria present on the examined bodies. This will open the way to further research on the subject.

Table 1. Fungi and bacteria grown on samples of mummified tissues from the 6th century and 12th century cemeteries, C and A respectively, in Naqlun; all the samples were examined by means of oxygen smear (Identification Agata Bańska, ALAB Warsaw, 7–13 October 2008)

Grave no.	Body no.	Sample	Fungi	Bacteria	
A.T.500	1	Earth from the thoracic cavity	–	<i>Kocuria rosea</i> , <i>Micrococcus luteus</i> <i>Bacillus species</i>	
A.T.501	1	Rib tissue	–	<i>Micrococcus luteus</i>	
A.T.501	1	Pelvic tissue	<i>Aspergillus niger</i>	<i>Bacillus species</i>	
A.T.501	1	Earth from under the back	–	<i>Bacillus species</i>	
C.T.007	2	Skin and tendon tissue	<i>Aspergillus niger</i>	–	
C.T.007	3	Skin tissue	<i>Aspergillus niger</i>	<i>Bacillus species</i>	
C.T.009	1	Skin tissue	–	<i>Bacillus species</i> <i>Staphylococcus epidermis</i>	
C.T.008	1	Skin tissue	–	<i>Micrococcus luteus</i>	
C.T.005	2	Skin tissue	–	<i>Bacillus species</i>	
C.T.010	1	Skin tissue and/or penis	sample A	<i>Aspergillus niger</i>	<i>Micrococcus luteus</i>
			sample B	–	<i>Bacillus species</i> <i>Kocuria rosea</i>

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