Institute of Experimental Morphology, Pathology and Anthropology with Museum
Bulgarian Anatomical Society

Acta Morphologica et Anthropologica, 32 (1-2)
Sofia ● 2025

Preliminary Anthropological Data of Inhumated Bone Remains from Late Medieval (Ottoman period) Necropolis from Object No. 7, along the Route of Road I-1 (E79) „Vidin-Ruzhintsi-Montana“, Near the Village of Turnyane, Vidin Region, Bulgaria

Nadezhda Atanassova[1,], Elena Vasileva[2]*

[1] Dept. Anthropology and Anatomy, Institute of Experimental Morphology, Pathology and Anthropology with Museum, Bulgarian Academy of Sciences, Sofia, Bulgaria
[2] Dept. of Medieval Archaeology, National Archaeological Institute with Museum, Bulgarian Academy of Sciences, Sofia, Bulgaria

*Corresponding author e-mail: naditimeva@gmail.com

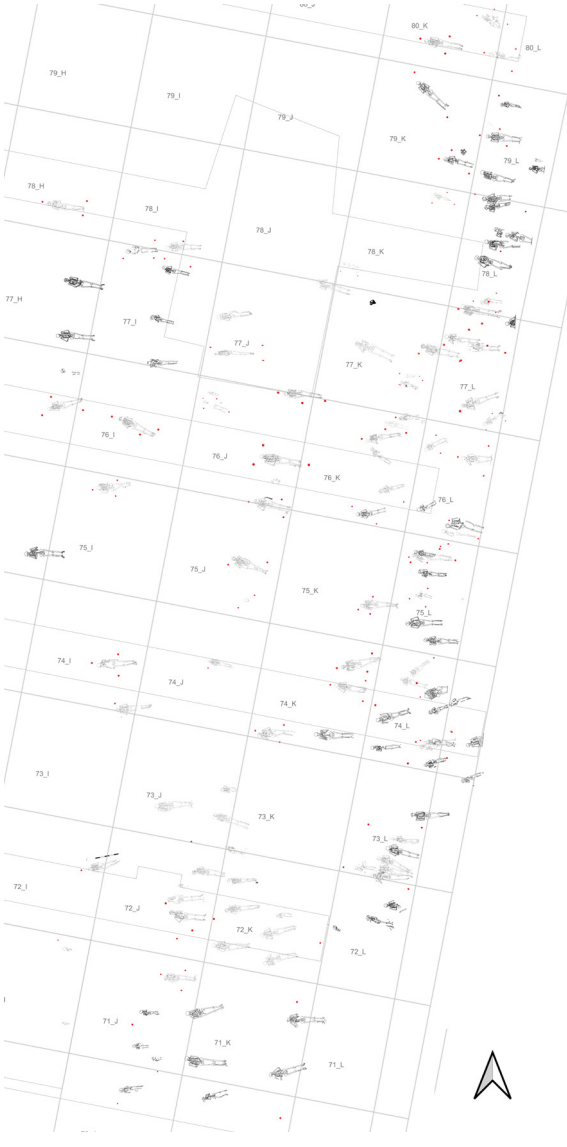
The aim of this article is to represent the preliminary results of anthropological characteristics and paleopathological analysis of bone remains discovered during the rescue archaeological excavations of the Christian necropolis from Ottoman period (15th – 17th centuries) near the village of Turnyane, Vidin Region, Northwestern Bulgaria. Standard anthropological methods of investigation were applied. Up to the present moment, bone remains from 17 individuals have been analyzed, covering grave structures from different sectors of the necropolis and individuals ranging from infancy to the end of the mature age group. The age-at-death identification of investigated buried show that the ratio of subadults to adults is 2.4:1 (71%:29%). In the sex-identified individuals, the male/female distribution is equal (4/5). The paleopathological analysis reveals a large number of pathological changes in the dental-jaw system, the cranial, and postcranial skeletons, which is typical for the populations inhabited Bulgarian lands during the Ottoman period.

Key words: Late Medieval (Ottoman period) settlement, Christian necropolis, paleoanthropology, paleopathology

Introduction

In 2020 – 2021 the settlement was recorded and surveyed in connection with the construction of the I-1 road (E-79) and is located about 300 m east of the village Turnyane, Vidin region. Most structures were excavated from the Late Middle Ages - buried

and above-ground dwellings, ovens, hearths, pits, graves. The archaeological material in all these dwellings consists of numerous ceramic fragments, including fragments of imported ceramics (majolica), animal bones, metal objects of daily life, coins and isolated bone finds, all dating from the 15th to 17th centuries. Three necropolises were also recorded and investigated - from the Early Bronze Age (EBA), the Middle Bronze Age (MBA) and the Middle Ages. The necropolis from the RBE is represented by 16 cremation graves without urns. The necropolis from the SBE is represented by 26 urns with cremation. The mediaeval necropolis is represented by 141 graves with inhumation **(Fig. 1)**. The mediaeval necropolis was recorded almost entirely in the north-eastern part of the site, with the exception of two graves which lay outside the boundaries of the necropolis. All the 141 graves were inhumations. The necropolis is Christian in character and the graves are aligned in a west-east direction. The grave pits, as far as they were recorded, have a rectangular or trapezoidal shape. The buried individuals lay on their backs with the lower limbs extended and the upper limbs in various positions **(Figs. 2, 3)**. During the study of the necropolis, an almost correct layout of the grave pits was noticed, which was oriented from south to north.



In a few of the graves, finds were found. These are personal belongings of the buried - jewelry and parts of clothing. This fact completely overlaps with the information we know from other similar necropolises, namely that graves from this period rarely have a rich inventory.

The results of the radiocarbon analysis give a period from 1470/80 to 1637/39, which is consistent with the material found in the other structures examined and allows us to assign the necropolis to the settlement. The documentary analyses carried out at this stage have enabled us to

Fig. 1. The general plan of the excavated Christian necropolis (from the 15th to the 17th c.) near the village of Turnyane.

Fig. 2. Grave No 39. Skeleton *in situ*

Fig. 3. Grave No 41. Skeleton *in situ*

prove with certainty that the settlement was founded in the 15th century and is recorded in the Ottoman registers and maps of 1530 under the name Tiryani and is located in the kaza Vidin.

This paper includes preliminary results from anthropological characteristics and paleopathological analysis of bone remains discovered during the rescue archaeological excavations of the mentioned above Late Medieval necropolis (15th – 17th centuries) near the village of Turnyane, Vidin Region, Northwestern Bulgaria.

Material and Methods

The material in this paper includes inhumated human bone remains from 15 graves from different sectors of the excavated necropolis. In the grave structures, individuals have been identified ranging from infancy to the end of the mature age group. Standard anthropological methods were applied for the age and sex identification of the buried [2, 3, 4, 5, 7, 8, 9, 14, 19, 20, 21, 23, 24]. The reconstruction of the stature [12, 17] and evaluation of the body mass [13] of adults was carried out depending on the state of the preserved long limb bones. Height categorizations are according to Martin rubrics [7]. Pathological changes and congenital anomalies of the cranial and postcranial skeleton were identified using the methods of Aufderheide, Rodriguez-Martin [1]; Ortner, Putschar [10]; Ortner [11]. The age distribution of dental enamel hypoplasia was analyzed by correlating the horizontal defect line (Linear enamel hypoplasia - LEH) with the corresponding age, based on Zubov's charts [24] for the development of deciduous and permanent dentition.

Results

The results of the individual anthropological analysis are as follows:

- **Grave No 13**

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Infans I (5-6 years) - The age was reconstructed based on dental status, while the estimation based on the preserved long bones indicated a younger age, in the range of 2.5 to 3 years.

Sex: Undetermined sex because of the young age of the individual.

Dentition: Deciduous, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Strongly expressed *cribra orbitalia* (CO) on the superior orbital roof of the right orbit, the left is fragmented.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Pitting enamel hypoplasia (PEH) on the lower second deciduous molars.

Postcranial pathology: Not observed.

➢ **Grave No 23**

Grave inventory: Bronze ring – hoop, on the phalanx of the right upper limb.

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Maturus (55-60 years) - The age was reconstructed based on the degree of synostosis of the cranial sutures and dental abrasion.

Sex: Most probably female - skeleton shows characteristics for both sexes with prevalence for female sex (pelvis – fragmented).

Stature: 149.90 cm (by Pearson [12]) – "under middle" stature

153.81 cm (149.79÷157.82) (by Trotter-Gleser [17]) – "middle" stature

Body weight assessment: 61.20 kg

Dentition: Permanent, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Not observed.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Extremely deteriorated dental status - caries and late carious complications, including ante mortem tooth loss.

Postcranial pathology: Strongly expressed degenerative-dystrophic changes (DJD) in all regions of the spine and weakly expressed in the right shoulder joint ; ankylosis of two thoracic vertebrae; lateral epicondylitis in the area of the left elbow joint (the right cannot be registered because of fragmentary of the distal end of right humerus).

➢ **Grave No 26**

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Juvenis (14-15 years) - The age was reconstructed based on dental status and epiphyseal development.

Sex: Probably male – sex was reconstructed by some skull features.

Dentition: Permanent, incomplete.

Morphological dental marks: Tubercle of Carabelli (2nd degree) - Europoid odontological feature.

Cranial pathology: Recombinant form of *cribra orbitalia* (CO) on the superior orbital roof - bilaterally. Trace of healed trauma above the right orbit caused by hitting with a sharp tool.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Pitting enamel hypoplasia (PEH) on the lower second molars. Linear enamel hypoplasia (LEH) – two horizontal lines on the upper central incisors and premolars, which correspond to stress in the physical development of the individual at 1-2 years of age.

Postcranial pathology: Not observed.

➢ **Grave No 30**

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Juvenis (15-16 years) - The age was reconstructed based on dental status and epiphyseal development.

Sex: Most probably male – sex was reconstructed by some pelvic and skull features, and measurements of the limb bones.

Dentition: Permanent, incomplete.

Morphological dental marks: Tubercle of Carabelli (4th degree) - Europoid odontological feature.

Cranial pathology: Porotic hyperostosis (PH) in the area of the auditory foramina – bilaterally. Trace of healed trauma on the middle part of the right parietal bone without traces of an infectious process.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: A small amount of tartar on the lower central teeth. Pitting enamel hypoplasia (PEH) on the lower first and second molars. Linear enamel hypoplasia (LEH) – two horizontal lines on the lower canines and first premolars, which correspond to stress in the physical development of the individual at 2-3 years of age.

Postcranial pathology: Porotic hyperostosis (PH) on long bones, especially on the humerus bones. Spina bifida occulta (S4-S5).

Additional bone material: Human bone remains of two children in Infans I - approximately 3 and 5-6 years old at the time of death.

- **Grave No 39**

Grave inventory: Bronze button under the right rib in the upper part of the chest

Condition of the skeletal material: Skull – fragmented and incompletely preserved. Postcranial skeleton – well preserved.

Age at death: Infans II (12-13 years) - The age was reconstructed based on dental status.

Sex: Undetermined.

Dentition: Mixed, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Serpens endocrania symmetrica (SEM) on the endocranial surface of the occipital bone. Weakly expressed cribra orbitalia (CO) on the superior orbital roof – bilaterally.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Pitting enamel hypoplasia (PEH) on the lower left second milk molar, first and second permanent molars. Linear enamel hypoplasia (LEH) – three horizontal lines on the upper central incisors and canines, which correspond to stress in the physical development of the individual at 1-2-3 years of age.

Postcranial pathology: Porotic hyperostosis (PH) on long bones, especially on the humerus bones and sternal surface of both clavicles.

- **Grave No 41**

Grave inventory: Glass ball (bead without a hole).

Condition of the skeletal material: Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Maturus (45-49 years) - The age was reconstructed based on the symphyseal pubis surface.

Sex: Male – the sex was reconstructed by pelvic and skull characteristics, as well as by the measurements of limb bones.

Stature: 174.57 cm (by Pearson [12]) – "tall" stature
82.22 cm (178.21÷186.52) (by Trotter-Gleser [17]) – "very tall" stature

Body weight assessment: 81.33 kg

Dentition: Permanent, incomplete.

Cranial pathology: Not observed.

Anatomical cranial variations: Persistent metopic suture.

Postcranial pathology: Spina bifida occulta (S1-S2). Enthesopathies on the distal ends of both fibulae. Periosteal reactions on the medial surface of the diaphysis of the left tibia and on the posterior surface of the diaphysis of the left femur. Moderately expressed degenerative-dystrophic changes (DJD) in the area of both knee joints and of the right elbow joint; lateral epicondylitis – bilaterally, more pronounced on the right humerus.

- **Grave No 44**

Grave inventory: Two earrings, copper alloy; two hollow moon-shaped pendants preserved; one earring, copper alloy, multi-component; three buttons, copper alloy, spherical, with an eye for sewing - three preserved and one fragmented; 1 coin – bronze; four bronze buttons in the area of the cervical vertebrae; two bronze coins (one of which was pierced), a bead and a bronze amulet/medallion with a chain, in the area of the left femur.

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Juvenis (18-19 years) - The age was reconstructed based on dental status and epiphyseal development.

Sex: Female – sex of the individual was reconstructed by pelvic and skull characteristics, as well as by the measurements of limb bones.

Dentition: Permanent, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Not observed.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Caries on the lower preserved molars. The lower second molars are impacted or either lost ante mortem (X-ray is required). Rotation of the lower left canine.

Postcranial pathology: Strongly expressed periosteal reaction on the medial surface of the diaphysis of the left tibia.

- **Grave No 47**

Grave inventory: No

Condition of the skeletal material: Skull – fragmented and incompletely preserved; postcranial skeleton – well preserved but incompletely preserved.

Age at death: Infans I (2-3 years) - the age was reconstructed based on dental status and length of the preserved long bones.

Sex: Undetermined sex because of the young age of the individual.

Dentition: Deciduous, incomplete.

Morphological dental marks: Tubercle of Carabelli (third degree) – Europoid

odontological feature.

Cranial pathology: Serpens endocrania symmetrica (SEM) on the endocranial surface of the occipital bone. Porotic hyperostosis (PH) in the area of the auditory foramina and parietal bones (on the ectocranial surface) – bilaterally.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Pitting enamel hypoplasia (PEH) on the right second lower deciduous molars. Rotation of the lower right deciduous canine.

Postcranial pathology: Bone lesions on the bodies of the thoracic vertebrae. Porotic hyperostosis on both femurs and both fibulae.

- **Grave No 53**

Grave inventory: Bronze pins in the lower jaw area, bronze button in the skull area.

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Maturus (40-44 years) - The age was reconstructed based on the degree of synostosis of the cranial sutures, symphyseal pubis surface and dental abrasion.

Sex: Most probably female - skeleton shows characteristics for both sexes with prevalence for female sex (pelvis – fragmented).

Stature: 160.48cm (by Pearson [12]) – "tall" stature
166.11 cm (162.16÷170.06) (by Trotter-Gleser [17]) – "tall" stature

Body weight assessment: 62.30 kg

Dentition: Permanent, incomplete.

Morphological dental marks: Cannot be observed.

Cranial pathology: Not observed.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Extremely deteriorated dental status – caries and late carious complications, including ante mortem tooth loss.

Postcranial pathology: Spina bifida occulta (S4-S5). Moderate to strongly expressed degenerative-dystrophic changes (DJD) in the lumbar region of the spine. Lateral epicondylitis – bilaterally, more strongly expressed on the left humerus. In the examined individual, perforation of the fossa olecrani of both humerus was recorded.

- **Grave No 54**

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Baby (6 months – 1 year) - the age was reconstructed based on dental status and length of the preserved long bones.

Sex: Undetermined sex because of the young age of the individual.

Dentition: Deciduous, incomplete.

Cranial pathology: Porotic hyperostosis (PH) on the endocranial surface of both parietal bones.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Not observed.

Postcranial pathology: Periostal reaction on the diaphysis of both humerus bones.

➢ **Grave No 107**

Grave inventory: Bronze button from the shoulder area.

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Adultus (25-26 years) – The age was reconstructed based on the symphyseal pubis surface and degree of synostosis of the cranial sutures. The abrasion of the preserved teeth is weak - grade 2.

Sex: Female – sex of the individual was reconstructed by pelvic and skull characteristics, as well as by the measurements of limb bones.

Stature: 148.03 cm (by Pearson [12]) – "short" stature

150.92 cm (147.00÷154.85) (by Trotter-Gleser [17]) – "under middle" stature

Body weight assessment: 53.56 kg

Dentition: Permanent, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Partial premature synostosis of the coronal cranial suture without cranial deformity.

Anatomical cranial variations: Not observed.

The scopic analysis of the skull revealed features which are not characteristic of the Europoid phenotype: facial prognathism, the nasal aperture is wide and the nasal bridge is flat; a heart-shaped nasal aperture; rectangular orbits.

Dental-jaw pathology: Extremely deteriorated dental status - caries and late carious complications, including ante mortem tooth loss and jaw cysts.

Postcranial pathology: Myositis ossificans on the midshaft of the right humerus.

➢ **Grave No 127**

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – fragmented and incompletely preserved.

Age at death: Maturus (40-44 years) – The age was reconstructed based on the symphyseal pubis surface, degree of synostosis of the cranial sutures, tooth abrasion and first rib surface.

Sex: Male – the sex was reconstructed by pelvic and skull characteristics, as well as by the measurements of limb bones.

Stature: 164.05 cm (by Pearson [12]) – "middle" stature

169.98 cm (165.81÷174.49) (by Trotter-Gleser [17]) – "above middle" stature

Body weight assessment: 72.70 kg

Dentition: Permanent, incomplete.

Cranial pathology: Not observed.

Anatomical cranial variations: Additional wormian bones in both halves of the lambdoid cranial suture.

Dental-jaw pathology: Extremely deteriorated dental status – caries and late carious complications, including ante mortem tooth loss and mandibular cyst. Large amount of tartar on the left upper and lower tooth rows. Pitting enamel hypoplasia (PEH) on the lower molars. Linear enamel hypoplasia (LEH) – three horizontal lines on the lower canines, which correspond to stress in the physical development of the individual at 1-2-3 years of age.

Postcranial pathology: Spina bifida occulta (S4-S5).

➢ ***Grave No 129***

Grave inventory: No

Condition of the skeletal material: Poor. Skull and postcranial skeleton – strongly fragmented and incompletely preserved.

Age at death: Infans II (7-8 years) - The age was reconstructed based on dental status.

Sex: Undetermined.

Dentition: Mixed, incomplete.

Morphological dental marks: Not observed on the preserved teeth.

Cranial pathology: Porotic hyperostosis (PH) on the region of glabella and both porotic acusticus externus.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Caries on the lower first deciduous molars. Pitting enamel hypoplasia (PEH) on the both lower deciduous second molars.

Postcranial pathology: Not observed.

➢ ***Grave No 135***

Grave inventory: Three multi-piece earrings, a string of beads and a coin, eight hairpins, on the front of the skull there is a partially preserved headband made of textile with bronze plates.

Condition of the skeletal material: Poor. Skull and postcranial skeleton – strongly fragmented and incompletely preserved.

Age at death: Infans II (7-8 years) - The age was reconstructed based on dental status. The age determined by the length of the long bones is in the range of 3 to 3.5 years, which indicates a delay in the individual‘s physical development.

Sex: Most probably female.

Dentition: Mixed, incomplete.

Morphological dental marks: Shovel-shaped upper central incisors - grade 1. This morphological dental trait is characteristic of the Mongoloid phenotype – it occurs in up to 70%, while in Europeid phenotype it does not exceed 15%.

Cranial pathology: Serpens endocrania symmetrica (SEM) on the endocranial surface of the occipital bone. Moderately to strongly expressed PH on the ectocranial surface of glabella, porotic acusticus externus (bilaterally) and posterior parts of parietal bones. Moderately (2nd degree) expressed cribra orbitalia (CO) on the superior orbital roof – bilaterally.

Anatomical cranial variations: Metopism. Additional wormian bones - three on the right lambdoid suture and one on the left side.

Dental-jaw pathology: Multiple caries on the deciduous teeth. Maxillar cyst in the area of the right deciduous molars. Pitting enamel hypoplasia (PEH) on the lower right first permanent molar. Linear enamel hypoplasia (LEH) on the upper central incisors – four horizontal lines, which correspond to stress in the physical development of the individual at 1-2 years of age.

Postcranial pathology: Porotic hyperostosis (PH) on the tibial bones.

➢ **Grave No 136**

Grave inventory: No

Condition of the skeletal material: Skull – fragmented and incompletely preserved. Postcranial skeleton - the long bones of the limbs are well preserved.

Age at death: Infans I (20-24 months) - The age was reconstructed based on dental status.

Sex: Undetermined sex because of the young age of the individual.

Dentition: Deciduous, incomplete.

Morphological dental marks: Not observed.

Cranial pathology: Weakly expressed *cribra orbitalia* (CO) on the superior orbital roof - bilaterally. Serpens endocrania symmetrica (SEM). Porotica hyperostosis on the endocranial surface of the left parietal bone, on the ectocranial surface of the skull base, maxillar, zygomatical bones and glabella.

Anatomical cranial variations: Not observed.

Dental-jaw pathology: Pitting enamel hypoplasia (PEH) on the lower second deciduous molars.

Postcranial pathology: Porotic hyperostosis (PH) on the posterior surface of femoral bones and anterior surface of humeral bones.

Discussion

The condition of the skeletons (including the cortical layer) is relatively good, which allows for a thorough anthropological and paleopathological analysis.

So far in the study, in terms of age, adolescent individuals up to 18/20 years old predominate, with a ratio of 2.4:1 (71%:29%). The individuals under 7 years of age (*Infans I*) predominate [**Fig. 4**]. In sex-identified individuals, the male/female distribution is equal (4/5).

The stature is reconstructed in two males and three females as it was mentioned above. A comparison was made between these values and the average stature for male and female skeletal series dated to the Ottoman period (15th-19th centuries), from the territory of Central Western and Southwestern Bulgaria [22], as well as with the

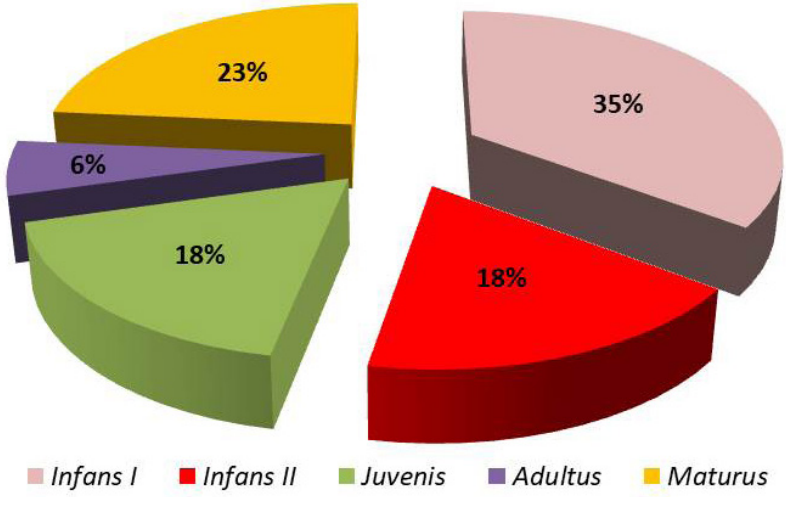


Fig. 4. Distribution of the investigated individuals by age-at-death

analyzed data in the statistical yearbooks for the height of all conscripts in the late 19th and early 20th centuries (1897-1920) [16]. The man from grave No. 41 of the Tarnyane series is with "tall" and "very tall" stature according to the Pearson [12] and Trotter-Gleser [17] formulas, and the differences with the male buried in grave No. 127, as well as with the average values for the synchronous skeletons, are statistically significant [**Fig. 5**], which is explained not only by genetic determination, but also by better living conditions for the individual from grave No. 41. The height of the male individual from grave No. 127 from Tarnyane is closest to the mean stature in Christian skeletal series from the Ottoman period [22]. The stature of the women interred in

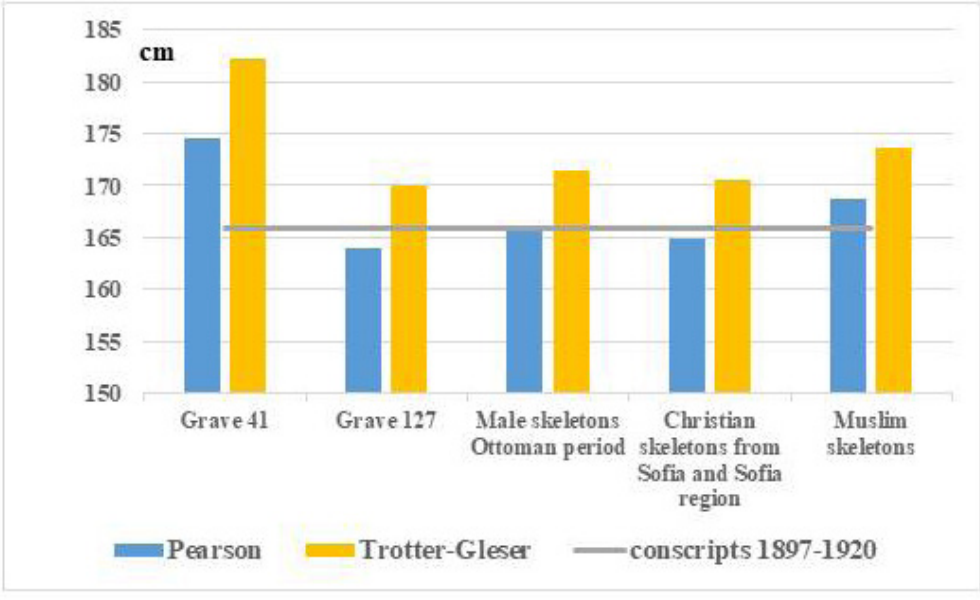


Fig. 5. Comparison of the stature of male skeletons from the necropolis at Turnyane with synchronous skeletal series and with the height of conscripts (1897-1920)

graves No. 23 and No. 107 from the necropolis near the village of Turnyane is below the mean values observed in synchronous female skeletal series, whereas the female buried in grave No. 53 exhibits a greater height than the others, with the statistically significant difference [**Fig. 6**].

The paleopathological analysis reveals a large number of pathological changes in the dental-jaw system, the cranial, and postcranial skeletons of adolescents and adults [**Table 1**]:

- Porotic hyperostosis **(Fig. 7)** – In the global scientific literature, a link has long been established between cranial porotic hyperostosis (PH) and iron-deficiency anemias (megaloblastic and hemolytic anemias). A high percentage of this type of pathological bone change is recorded in many ancient populations, which is attributed to nutritional deficiencies, poor sanitary and hygienic conditions, numerous infectious diseases, and various cultural and religious practices during pregnancy and breastfeeding, leading to severe vitamin B group deficiencies in infants and children [18].

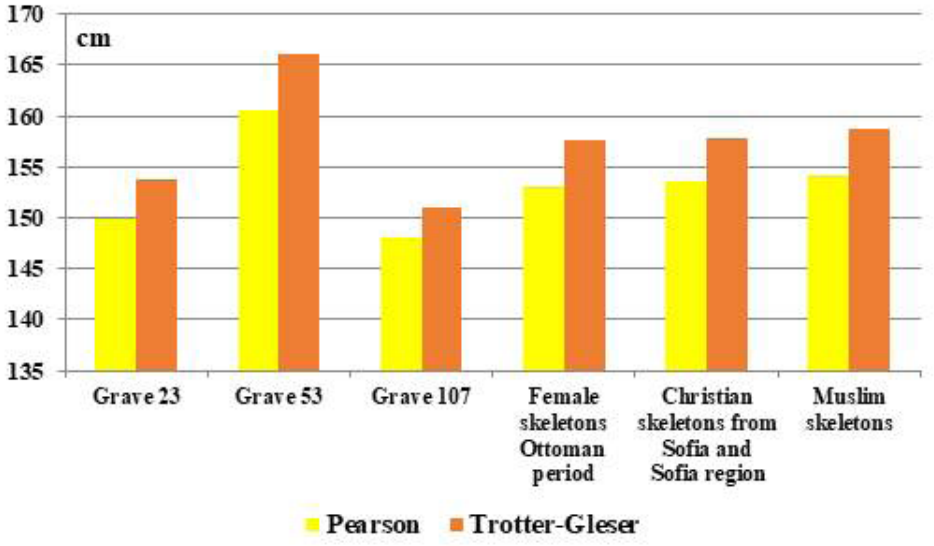


Fig. 6. Comparison of the stature of female skeletons from the necropolis at Turnyane with synchronous skeletal series

Fig. 7. Grave No. 135. Child (7–8 years old). Porotic hyperostosis (PH) on the ectocranial surface of both parietal bones.

➢ Cribra orbitalia (CO) **(Fig. 8)**. Pathological porotic bone change of the superior orbital roof as a result of subperiostal bleeding associated with deficiency of vitamin C and B12 predominately in the childhood. Active forms of CO is a mainly childhood phenomenas. Cribra orbitalia results from multiple nutritional deficiencies associated mainly with anemia (megaloblastic and hemolytic anemias), but also with scurvy, rickets, hemangiomas or trauma [18]. This is a common paleopathological finding in human skulls from archaeological sites;

➢ Serpens endocrania symmetrica (SEM) - periosteal reactions on the endocranial surface of the occipital bones **(Fig. 9)**, the bones of the limbs and ribs, as well as bone lesions on the vertebrae. These pathological bone changes are associated in the scientific literature with tuberculosis. Due to the lack of antibiotics in past historical periods, the risk of fatal outcomes resulting from secondary intracranial infections, caused by respiratory viral and bacterial infections, was very high among adolescent individuals [6];

Fig. 8. Grave No. 26. Juvenile individual (14-15 years). Cribra orbitalia (CO)

Fig. 9. Grave No. 47. Child (2-3 years). Serpens endocrania symmetrica (SEM)

➢ Caries and late carious complications, including jaw cysts and ante mortem tooth loss **(Fig. 10)**;

➢ Degenerative-dystrophic changes (DJD) in the area of the spine and limbs (**Fig. 11**);

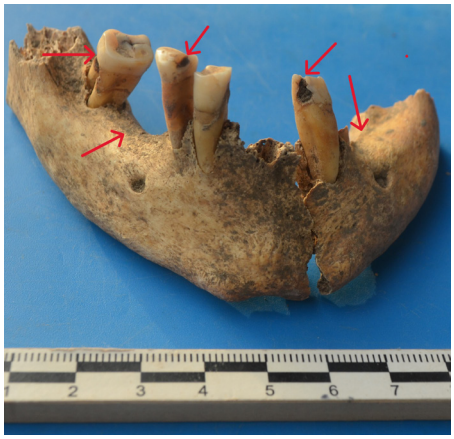


Fig. 10. Grave No. 23. Probably female individual (55-60 years). Cribra orbitalia (CO)

Fig. 11. Grave No. 23. Probably female individual (55-60 years). Ankylosis of thoracic vertebrae

➢ Lateral epicondylitis on the humeral bones, resulting from excessive strain (repetitive movements) on the elbow joints (**Fig. 12**);

Fig. 12. Grave No. 53. Probably female individual (40-44 years). Lateral epicondylitis on the humeral bones

Fig. 13. Grave No. 41. Male individual (45-49 years). SSBO (S1-S2)

➢ Sacral Spina Bifida Occulta (SSBO) – a congenital defect in the development of the spine, in which the spinal cord remains relatively unprotected due to the absence of a bony dorsal wall. In SSBO, the meninges and/or nervous tissue remain beneath the skin. The occurrence of spina bifida occulta in the sacral region, spreading from S1 to S5 (from the first to the fifth sacral vertebrae), is referred to as sacral spina bifida occulta (SSBO). It is a hidden defect that may be indicated by a skin lesion such as a hairy patch, dermal sinus tract, dimple, hemangioma or lipoma. The investigations show that the rarest cases of SSBO involve a fully open sacral canal and an open canal between S1 and S2 [15], which is also the case with the studied male skeleton from Grave No. 41 (**Fig. 13**).

Conclusions

Preliminary studies of the population near the village of Turnyane show mixed phenotypic traits. Most of the identified morphological bone changes in the studied skeletons were due to nutritional deficiency, various cultural and religious practices during pregnancy and breastfeeding, as well as poor sanitary and hygienic living conditions, which led to infectious diseases, including tuberculosis.

References

1. **Aufderheide, A. C., C. Rodriguez-Martin**. *The Cambridge encyclopedia of human paleopathology*. NY, Cambridge University Press, 1998.
2. **Bass, W.** *Human Osteology: A Laboratory and field manual of human skeleton*. Columbia, Mo, Special publication no. 2 of the Missouri Archaeological Society, 2005.
3. **Brothwell, D.** *Digging up bones*. London, British Museum of Natural History, 1965.
4. **Buikstra, J., D. Ubelaker.** *Standards for data collection from human skeletal remains*. Fayetteville, AK, Arkansas Archaeological Survey, 1994.
5. **Ferembach D., I. Schwidetzky, M. Stloukal**. Recommendations for age and sex diagnoses of skeletons. – *J. Hum. Evol.*, **9**, 1980, 517-549.
6. **Hershkovitz, I., C. M. Greenwald, B. Latimer, L. M. Jellema, S. Wish-Baratz, et al.** Serpens Endocrania Symmetrica (SES): A New Term and a Possible Clue for Identifying Intrathoracic Disease in Skeletal Populations. – *American Journal of Physical Anthropology*, **118**, 2002, 201–216.

7. **Martin, R., K. Saller.** *Lehrbuch der anthropologie in sistematischer Darstellung*. Stuttgart, Gustav Fischer Verlag, 1957.
8. **Maresh, M.M.** Measurements from roentgenograms. – In: *Human growth and development* (Ed. R. W. McCammon.*)*, Springfield IL: C.C.Thomas, 1970, 157–200.
9. **Meindl, R., C. Lovejoy**. Ectocranial suture closure: a revised method for the termination of skeletal age at death based on lateral-anterior sutures. – *Am. J. Phys. Anthropol.*, **68**, 1985, 57-66.
10. **Ortner, D. J, W. G. J. Putschar**. *Identification of pathological conditions in human skeletal remains*. Washington, Smithsonian Institution Press, 1981.
11. **Ortner, D. J**. *Identification of pathological conditions in human skeletal remains*. *2nd Edition*, San Diego, Academic Press, 2003.
12. **Pearson, K**. Mathematical contributions to the theory of evolution. V. On the reconstruction of the stature of prehistoric caces. – *Phil. Trans. Royal Soc. A*, **193**, 1899, 169– 244.
13. **Ruff, C. B., W. W. Scott, , A. Y. Liu, 1991.** Articular and diaphyseal remodeling of the proximal femur with changes in body mass in adults. – *Am. J. Phys. Anthropol*., **86**(3), 397- 413.
14. **Schaefer, M., S. M. Black, L. Scheuer**. *Juvenile osteology: A laboratory and field manual.* San Diego, CA, Academic Press, 2009.
15. **Singh, R.** Classification, causes and clinical implications of sacral spina bifida occulta in Indians. – *Basic Sciences of Medicine*, **2**(1), 2013, 14-20.
16. **Stoev, R.** Body height in recruits in Bulgaria (1897-1920). – *Acta morphologica et anthropologica*, 18, 2012, 95-101.
17. **Trotter, M., G. Gleser**. Estimation of stature from long bones of American whites and Negroes. – *Am. J. Phys. Anthropo.l*, **10**, 1952, 469–514.
18. **Walker, P. L. R. R. Bathurst, R. Richman, T. Gjerdrum, V. A. Andrushko.** The causes of porotic hyperostosis and cribra orbitalia: A reappraisal of the iron-deficiency-anemia hypothesis. – *American Journal of Physical Anthropology*, 2009, 139: 109-125
19. **White, T. D., P. A. Folkens.** *The Human bone manual*. Burlington: Elsevier, 2005.
20. **Alexeev, V. P., G. F. Debetz.** *Craniometry. Methods of anthropological research.* Moscow, Science, 1964 [in Russian].
21. **Alexeev, V.P.** *Osteometry. Methods of anthropological research.* Moscow, Science, 1966 [in Russian].
22. **Atanassova, N.** Comparative characteristics of anthropological indicators of bone remains from the Ottoman period (15th – 19th Century). *PhD thesis*, Bulgarian Academy of Sciences, Sofia, 2018 [in Bulgarian].
23. **Gerasimov, M.** *Reconstruction of the face from the skull: (modern and fossil human)*. Moscow, Publishing house AN USSR, 1955 [in Russian].
24.0 **Zubov, A.** *Odontology. Methods of anthropological research.* Moscow, Science, 1968 [in Russian].

Table 1. Pathological bone changes and cranial anatomical variations in the investigated skeletons from the necropolis near the village of Turnyane

Disease/Anatomical variation	*Subadults*	*Juvenis*		*Adultus*		*Maturus*	
		♂	♀	♂	♀	♂	♀
CO	4	1					
PH on the skull	5	1					
SEM	4						
Skull trauma		2					
Premature synostosis of skull sutures					1		
Metopism	1					1	
Additional cranial bones	1					1	
Dental-jaw pathology	2		1		1	1	2
LEH	2	2				1	
PEH	6	2				1	
Tubercle of Carabelli	1	2					
Shovel-shaped upper central incisors	1						
DJD – spine							2
DJD – extremities						1	1
PH on the postcranial skeleton	5	1	1			1	
Postcranial trauma							
Myositis ossificans					1		
Lateral epycondilitis						1	2
Supratrochlear foramen							1
SSBO						2	1