

# New finds at a previously explored site: Bioarchaeological analysis of skeletons from several newly excavated graves from Staré Město – ‘Na Valách’

Nové nálezy z již prozkoumané lokality: bioarcheologická analýza koster z nově objevených hrobů ze Starého Města – „Na Valách”

– Martina Fojtová\*, Luděk Galuška, Tomáš Chrástek –

## KEYWORDS

Early Middle Ages – Great Moravia – paleopathology – workload – grave goods – social status

## ABSTRACT

*In the winter of 2020, a rescue archaeological excavation took place at the construction site of the Cyril and Methodius Centre of the Slovak Museum in the southern part of the well-known Middle Hillfort period burial ground ‘Na Valách’ in Staré Město. The site had been already excavated in the 1940s and 1950s. Nevertheless, several new graves were found. The purpose of this article is to present these new findings to the scientific community.*

*Graves H 1/2020 to H 4/2020 were discovered in relatively close proximity to each other, while four other graves (H 5/2020 – H 8/2020) were located separately. These graves were all situated on the periphery of the late 1940s and 1950s research areas, where they escaped the attention of archaeologists.*

*Unfortunately, most of the graves were damaged during the machine excavation, which was subsequently reflected in the degree of preservation of the skeletons. In total, nine human skeletons were discovered in seven grave pits. The anthropological analysis identified three adults (one male and two females aged 40–60, 20–30, and 45–55 years) and six non-adults. Three of the immature individuals died between the ages of 15 and 17, one child was about 3 years old, and the two other children were 8–9 years old. Despite the young age (and presumably higher social status) of most of the individuals, many pathologies were found in their skeletons.*

*The graves are dated from the second half of the 9th century to the beginning of the 10th century. Except for grave H 5/2020, all the other graves yielded rich finds (earrings, a ring, spherical buttons, knives, and ceramic fragments). The nature of the finds indicates that the graves belonged to representatives of the upper social class of early medieval Moravia in the second half of the 9th century.*

\* Corresponding author – E-mail address: mfojtova@mzm.cz

<https://doi.org/10.47382/pv0651-03>

Received 1 February 2024; received in revised form 4 May 2024.  
Available online 21 May 2024.

Copyright © 2024 Czech Acad Sci, Inst Archaeology Brno, and the authors.  
This is an open access article under the CC BY-NC-ND 4.0 license  
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>).  
Competing interests: The authors have declared that no competing interests exist.

## 1. Introduction

The burial site ‘Na Valách’ in Staré Město is the largest church necropolis from the Great Moravian period. Its origins, however, go back much further, dating to the period of the cremation burial rite, as practised by Slavs in our region in the 6th–8th centuries. The oldest skeletal graves date to the turn of the 8th and 9th centuries at the latest; the final remains were buried near the church during the second half of the 10th century. The first significant rescue research was started here in 1928 by Karel Buchtela and Jaroslav Böhm in the garden of Schilder’s Mill. However, it was soon taken over by local archaeologist Antonín Zelnitius, who continued work until 1932 (Niederle, Zelnitius 1929; Zelnitius 1932). Systematic excavations began after World War II in 1948. For nearly 40 years they were directed by Vilém Hrubý, and, after he died in 1985, by Luděk Galuška. In 1949, the foundations of the first proven Great Moravian sacral architecture, a single-nave church with a horseshoe-shaped apse, were discovered at the burial site (Hrubý 1955a, 265–306). When it was realised around the middle of the 9th century, the local burial site became the central necropolis of Christians for the entire settlement agglomeration, containing the graves of the complete social spectrum of the time, from the nobility to the common people. More than 2,000 skeletal graves have been examined here (Hrubý 1955b; Hochmanová-Vávrová 1962; Galuška 2002; 2004; Fojtová, Galuška 2022, etc.), while others, as our study suggests, are still undiscovered under the developed area of the town, even in places we thought were fully excavated. The purpose of this article is to present several such graves that were unexpectedly discovered at the site in 2020.

## 2. Materials

Rescue archaeological excavation on the building of the Cyril and Methodius Centre of the Slovak Museum (carried out in collaboration by the Moravian Museum and the Slovak Museum in Uherské Hradiště) was conducted in January and February 2020 (Galuška, Langr 2021) at the archaeologically significant early medieval site ‘Na Valách’, near the Monument of Great Moravia in Staré Město (Fig. 1, 2). The excavation started after several skeleton graves were disturbed during the lowering of the ground level by a machine excavator. The site had previously been archaeologically investigated in the 1940s and 1950s by Vilém Hrubý. Thus, no more archaeological finds were expected here. Nevertheless, seven graves and scattered bones were found, apparently overlooked in the earlier research. Unfortunately, most of them were damaged during the machine excavation. This was subsequently reflected in the degree of preservation of the skeletal remains. Grave H 7/2020 was the best preserved, while the remains from grave H 6/2020, which was



**Fig. 1.** Location of the site. Map source: Google Earth, Mapy.cz, graphic by M. Fojtová.

**Obr. 1.** Poloha lokality. Mapové podklady: Google Earth, Mapy.cz, grafika M. Fojtová.

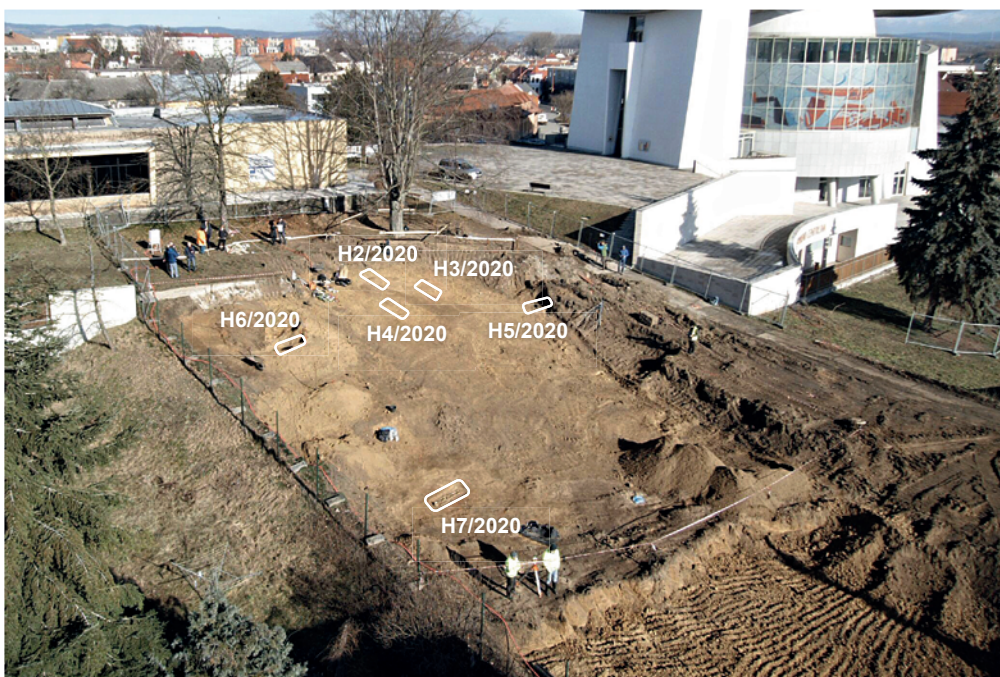
almost completely destroyed by the excavator, were in the worst condition. In general, the preservation of the skulls was slightly better than that of the postcranial skeletons. With the possible exception of grave H 6/2020, which may have been a multiple grave, given the unclear stratigraphic relationships, each grave pit contained a single skeleton.

The graves lay in the gravel bedrock of the first river terrace of the River Morava. They were discovered in the southern part of the burial ground sloping southwards towards Jezuitská Street. Six of them (graves H 1/2020 – H 6/2020) were located about 30 to 35 m to the SSE from the apse of the early medieval church ‘Na Valách’. One grave (H 7/2020) was more distant, located 45 m to the south of the church (Fig. 3). Their pits were oriented mostly in the NW–SE or SW–NE direction and – with exceptions – did

not show any colour differences in the gravel-sand subsoil. Additionally, it was later discovered that the graves were located at the boundaries of the 1949 and 1950 excavation seasons, between which an unexplored area was left. The latter two facts are probably the reasons why the graves escaped discovery in the past.

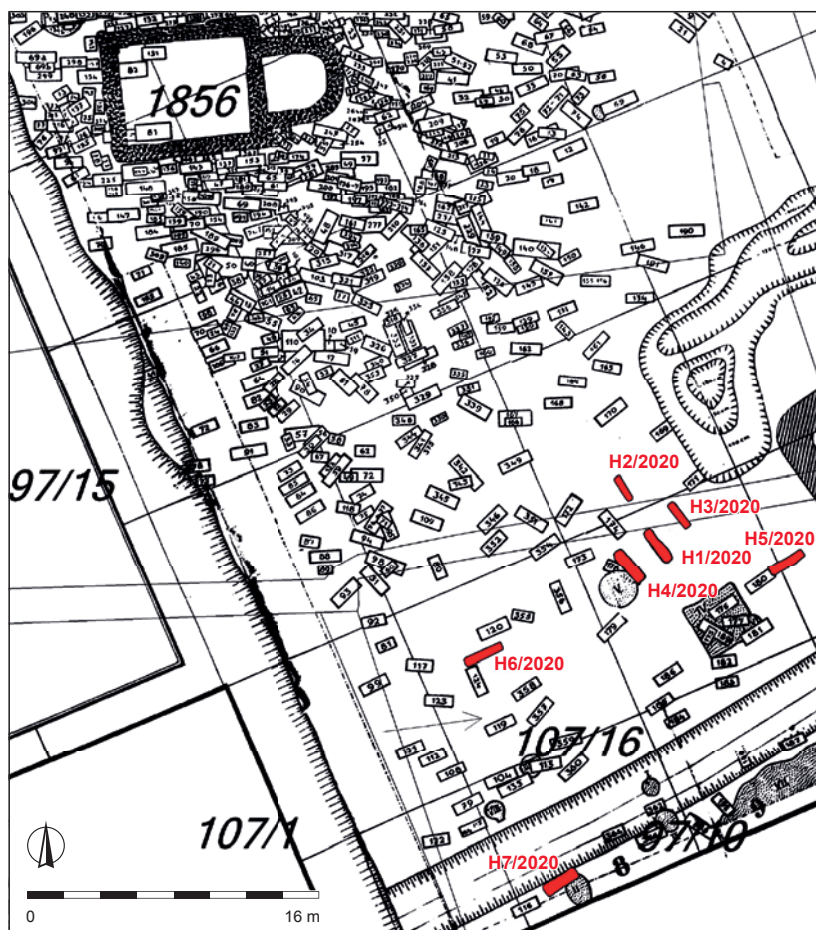
### 3. Methods

Eight individuals were identified from the seven graves containing human skeletal remains (the skeletal remains of one other individual were collected in excavated soil; the grave pit was not preserved). When unearthed, the skeletal remains were stripped of soil residues and carefully cleaned with water and a toothbrush. After drying, the original bone was reconstructed by glueing it where possible with a hot glue gun.



**Fig. 2.** Aerial view of the area of excavation (grave H 1/2020 is missing as it had already been removed at the time the photo was taken.) Photo and graphic by T. Chrástek.

**Obr. 2.** Letecký pohled na lokalitu (chybí hrob H 1/2020 vyzvednutý již před pořízením fotografie.) Foto a grafika T. Chrástek.



**Fig. 3.** Location of newly discovered graves in the context of the burial site. According to Hrubý 1955a, Plán 3; graphic by T. Chrástek.

**Obr. 3.** Umístění nově objevených hrobů v kontextu pohřebiště. Podle Hrubý 1955a, Plán 3; grafika T. Chrástek.

The degree of preservation of the skeletons was assessed using a system of crosses separately for the skull (S) and the postcranial skeleton (P) (for details, see Fojtová, Galuška 2022, 12). For determining the sex of adult individuals, we preferred methods based on sex differences in pelvic structures (Novotný 1986; Brůžek 2002; Brůžek et al. 2017) and skull (Ferembach et al. 1980). The overall robusticity of the skeleton and the development of muscle tendons were also taken into account. In the case of two juvenile individuals, it was also possible to determine the sex according to the morphology of the pelvis or skull; in the latter case, this determination was also supported archaeologically by grave goods. For other subadult individuals, sex was not determined due to the unreliability of available methods.

The method of assessing the degree of tooth eruption and root maturation (Ubelaker 1978) was preferred for estimating the age at death of children and juveniles (while the root maturation degree was applied only in loose teeth). Where possible, the state of skeletal maturation (Schaefer et al. 2009) was also assessed. Measurement of the length of the long bones (Stloukal, Hanáková 1978) served as an auxiliary criterion. To estimate the biological age in adults, the freeware ADBOU (<https://www.statemachine.net/software/ADBOU2/>) (Boldsen et al. 2002), combining assessment of the degree of cranial suture obliteration with age-related changes on the symphyseal surface of the pubic bone and auricular surface of the ilium, was preferably used. The method of assessing the degree of tooth abrasion (Lovejoy 1985) was mainly used as an auxiliary criterion. In one case, the degree of closure of the cranial sutures (Meindl, Lovejoy 1985) was also used. The data acquired by the aforementioned methods (depending on the

state of preservation of the skeletons) were summarized and the resulting age was determined as the probable intersection of the obtained age intervals.

For the metric evaluation of adult skeletal remains, the Drozdová (2004) system of dimensions was used. Stature was calculated as per Sjøvold (1990), using the dimension with the highest correlation coefficient available. In cases where it was possible to measure the bones of both sides, the average value was used to calculate stature. The platymeric and pilasteric indices of the femur and cnemic index of the tibia were also calculated, as they are good predictors of the physical load on the respective muscle groups and can therefore provide information about the lifestyle of the individual.

To distinguish individual teeth and their position, a two-digit tooth marking (the so-called dental cross) is most often used in the text. The first digit indicates whether the tooth is permanent (1–4) or deciduous (5–8), and also defines a specific dental quadrant (1 or 5 – upper right, 2 or 6 – upper left, 3 or 7 – lower left, 4 or 8 – lower right quadrant). The order of the teeth in the respective quadrant is then indicated by the second number (1–8 for permanent teeth and 1–5 for temporary teeth) (Leatherman 1971).

The health status of the studied individuals was assessed mainly according to the criteria of Aufderheide and Rodríguez-Martín (1998), Ortner (2003), Horáčková et al. (2004), and Waldron (2009). The basic examination method was the macroscopic evaluation of found pathologies. To refine the paleopathological diagnosis, radiographs (performed at the Department of Clinical Imaging of St. Anne's University Hospital in Brno) were, in some cases, also made.

#### 4. Results and discussion

##### 4.1. Description of skeletons

**Grave H 1/2020** (Fig. 4, 5)

**Sex:** undetermined

**Age:** 8–9 years

**Stature:** undetermined

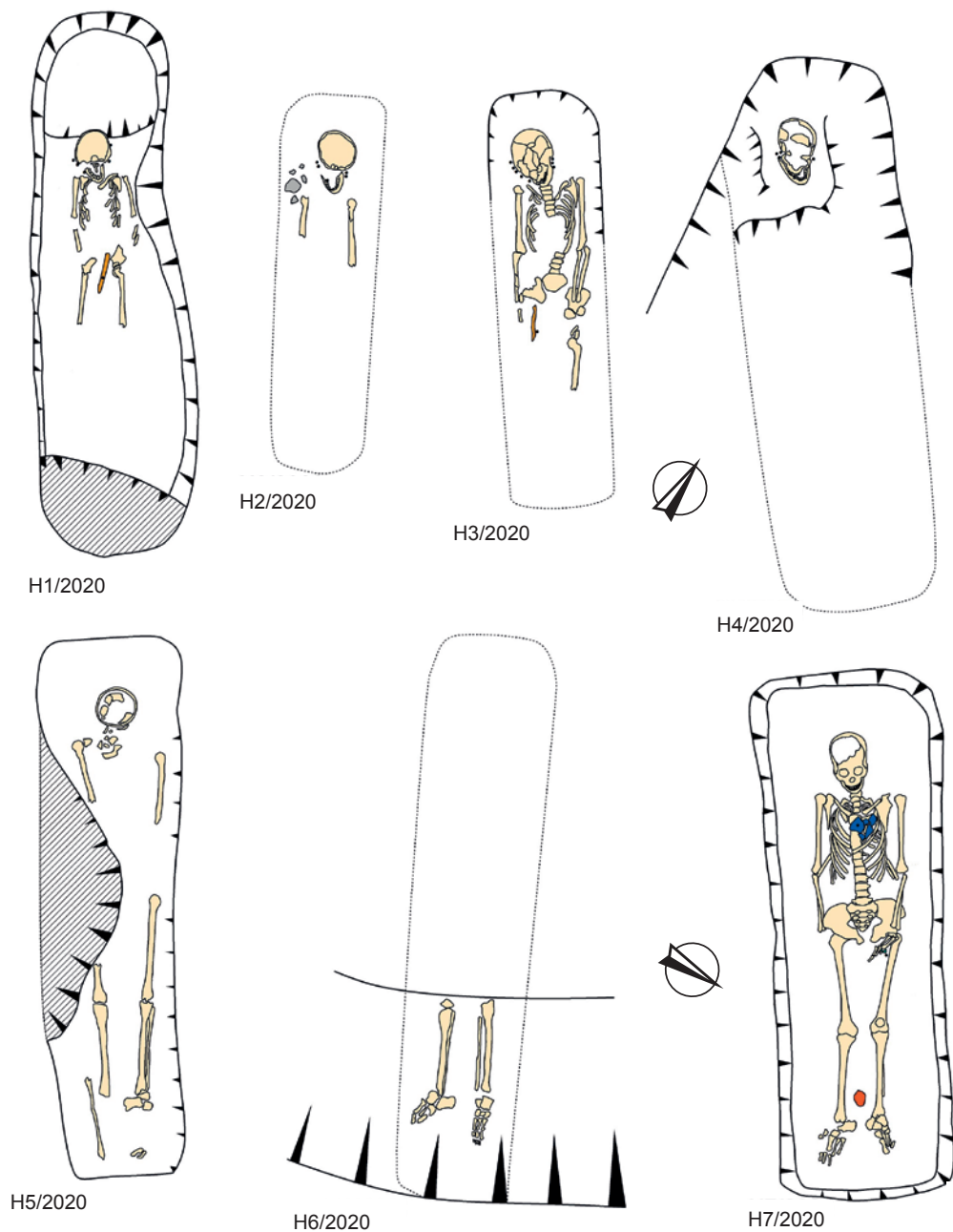
**State of preservation:** S+ P+

A child skeleton, laying in the supine position, oriented NW–SE. The skeleton is not very well preserved – the skull has been damaged by an excavator, most vertebrae and skeleton of lower limbs distal to knee joints are missing, and hands and forearms are fragmented. However, the auditory ossicles, probably of the left side, are preserved.

**Anatomical variants:** lambdoid ossicles, bilateral thinning of the occipital plate in the area of the transverse sulcus, and also perforation on the right (probably a vascular connection).

**Pathological changes:** dental enamel hypoplasia (DEH) on the lower permanent incisors. On the exocranial surfaces of the preserved skull bones, subperiosteal new bone formation is accompanied by several areas of increased porosity. Bone formation also occurs on the diaphyses of the long bones of the limbs.

**Grave goods:** three complete grape-shaped silver earrings and a fragment of a fourth one, a spherical button (gombík) made of bronze or copper, and an iron knife.



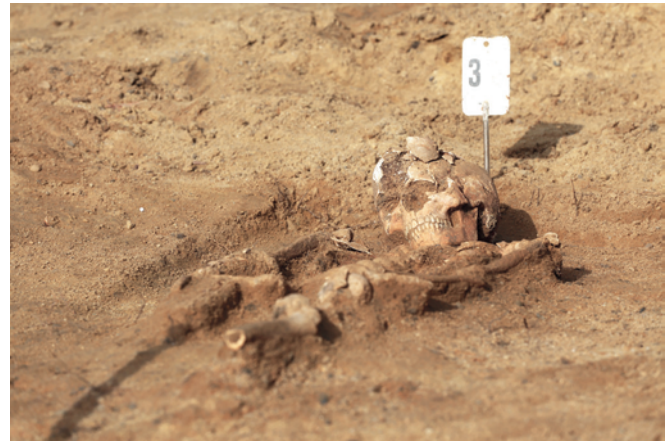
**Fig. 4.** Graves H 1/2020 – H7/2020. Drawing by L. Galuška, graphic by T. Chrástek.

**Obř. 4.** Hroby H 1/2020 – H7/2020. Kresba L. Galuška, grafika T. Chrástek.



**Fig. 5.** Grave H 1/2020 – field photograph. Photo by T. Chrástek.

**Obr. 5.** Hrob H 1/2020 – snímek z terénu. Foto T. Chrástek.



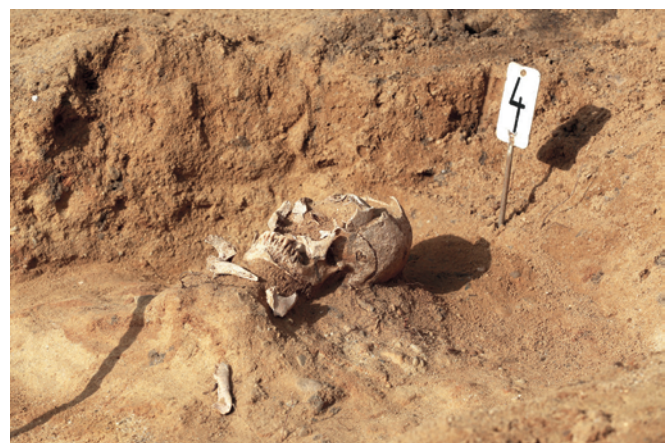
**Fig. 7.** Grave H 3/2020 – field photograph. Photo by T. Chrástek.

**Obr. 7.** Hrob H 3/2020 – snímek z terénu. Foto T. Chrástek.



**Fig. 6.** Grave H 2/2020 – field photograph. Photo by T. Chrástek.

**Obr. 6.** Hrob H 2/2020 – snímek z terénu. Foto T. Chrástek.



**Fig. 8.** Grave H 4/2020 – field photograph. Photo by T. Chrástek.

**Obr. 8.** Hrob H 4/2020 – snímek z terénu. Foto T. Chrástek.

**Grave H 2/2020** (Fig. 4, 6)

**Sex:** undetermined (probably a female, based on skull morphology)

**Age:** 15–17 years

**Stature:** undetermined

**State of preservation:** S+ P+

The skeleton may have been lying in the supine position on its back, in NW–SE orientation, but only an incomplete skull and fragments of the upper limbs are preserved. The rest of the skeleton was not found – probably it had been destroyed by the excavator.

**Pathological changes:** linear DEH on the incisors and canines.

**Grave goods:** two pairs of silver earrings decorated with four globes, and a fragment of an animal bone.

**Grave H 3/2020** (Fig. 4, 7)

**Sex:** undetermined

**Age:** 15 years

**Stature:** undetermined

**State of preservation:** S+++ P+

The skeleton lying in the supine position in NW–SE orientation, with the skull slightly inclined to the right and verticalized clavicles. The skull is almost completely preserved, the postcranial skeleton is fragmentary, and the bones of the free lower limbs, except for a fragment of the proximal part of the left femur, are completely missing.

**Anatomical variants:** absent parietal foramina.

**Pathological changes:** linear DEH on the front teeth of both jaws, dental calculus on the buccal surfaces of the upper molars. Cribra orbitalia (porotic type) were noted on both orbital roofs. Porosity on the left-sided articular surfaces of the 1st to 4th cervical vertebrae and the upper surfaces of vertebral bodies C3–5. Periosteal apposition on lateral surfaces of both mandibular rami and the exocranial surfaces of the frontal squama and parietal bones (especially along the coronal suture).

**Grave goods:** one ring-shaped and seven silver grape-shaped earrings in various stages of preservation, and an iron knife.

**Grave H 4/2020** (Fig. 4, 8)

**Sex:** female

**Age:** 20–30 years

**Stature:** undetermined

**State of preservation:** S++ P0

Only the damaged gracile skull, placed on the back of the head and slightly bent to the left, and the disarticulated mandible are preserved. Of the postcranial skeleton, only a few small fragments of scapulae, clavicles, atlas, and ribs are present.

**Anatomical variants:** tooth 38 is not developed, and other third molars do not reach the occlusal plane. A perforation (ø 4–5 mm) formed on the mastoid part of the right temporal bone cranially from the mastoid process – probably a vascular connection communicating with the intracranial space.



**Fig. 9.** Grave H 5/2020 – field photograph. Photo by J. Langr.  
**Obr. 9.** Hrob H 5/2020 – snímek z terénu. Foto J. Langr.

**Pathological changes:** linear DEH on the incisors of both jaws. Several extensive carious lesions – the crown of tooth 46 is destroyed, destruction of crown distal surfaces of teeth 14 and 16. A small carious lesion is also present on tooth 14 mesial surface, and at the root tip of this tooth, a periapical lesion drained by a fistula to the vestibular space is formed. About 1/3 of both the teeth 36 and 37 crowns were destroyed by caries spreading probably from the interdental space. Dental calculus is present on the buccal surfaces of the upper molars. On the endocranial surface,

abnormal vascular impressions are developed. Abnormal porosity was noted on the palatal processes of both maxillae.

**Grave goods:** fragments of three grape-shaped and one six-globe-shaped earring.

**Grave H 5/2020** (Fig. 4, 9)

**Sex:** male

**Age:** 40–60 years

**Stature:** 165.6 ± 4.1 cm (F11)

**State of preservation:** S+ P++

The grave pit of H 5/2020 was damaged by a recent object, some parts of the skeleton were therefore dislocated. Moreover, the grave was disturbed during excavation. The skeleton of medium robusticity with moderately developed muscular attachments was lying in the supine position, probably oriented WSW–ENE. The skull is fragmentary (only fragments of the parietal and occipital bones and the left mandible, and teeth 43 and 44 are preserved). The postcranial skeleton preserves mainly the long bones of the limbs (humerus, femur, tibia, and both fibulae, mostly with damaged epiphyses), as well as a fragment of the right hip bone, proximal part of the right fifth metatarsal, the left tarsals (except the intermediate and lateral cuneiforms), fragments of the right scapula, and the right scaphoid.

**Anatomical variants:** absent parietal foramina.

**Workload indices:** hyperplatymeric, no pilaster, eurycnemic.

**Pathological changes:** the 36 was lost intravitaly. The 38 alveolus bears traces of inflammation (the tooth is not preserved). A shallow lesion of 8–10 mm in diameter, with an uneven, porous surface and signs of a reparative process on the edges, was noted on the popliteal surface of the right femur about 15 mm proximal to the medial condyle.

**Grave goods:** none, except a fragment of a cow’s (*Bos primigenius* f. *taurus*) calcaneus and several other animal bone fragments.

**Grave H 6/2020** (Fig. 4, 10)

Grave pit H 6/2020 was discovered under dramatic circumstances – the excavator destroyed the grave almost completely, and part of the skeleton was loaded onto the back of a tipper lorry. Subsequently, the operator noticed other parts of the skeleton in the second bucket of the machine and put its contents back in place. As a result, the bones were initially traced in the mound of dirt and then the pit containing additional bones from the bucket was examined until it was possible to recover part of the lower limbs of the skeleton in situ. During anthropological analysis, the skeletal remains of two individuals were found – a female (H 6a/2020) and a child (H 6b/2020). The graves must have been placed very close to each other; we cannot exclude the possibility that it was a double grave.



**Fig. 10.** Grave H 6/2020 – field photograph. Photo by M. Fojtová.  
**Obr. 10.** Hrob H 6/2020 – snímek z terénu. Foto M. Fojtová.

#### Grave H 6a/2020

**Sex:** female

**Age:** 45–65 years

**Stature:** undetermined

**State of preservation:** S+++ P++

A skeleton of medium robusticity with strong muscular relief resting in a supine position on its back, probably in SSW–NNE orientation. The skull is completely preserved. The postcranial skeleton preserved mainly long bones of the limbs (humerus, femur, tibia, and fibula of both sides, though with damaged epiphyses), the skeleton of both legs, left hip bone, fragments of forearm bones, and scapulae.

**Anatomical variants:** lambdoid ossicles, left asterionic ossicle, zygomaticofacial foramen bilaterally doubled.

**Workload indices:** platymeric, middle pilaster, mesocnemic.

**Pathological changes:** intravital loss of teeth 16 and 36, almost half of tooth 37 crown destroyed by caries. Other carious lesions on tooth 26 distal surface. Periodontitis, dental calculus. Osteoarthritis in the interphalangeal joints of the left foot.

**Grave goods:** one silver grape-shaped earring and fragments of unidentified animal bones.

#### Grave H 6b/2020

**Sex:** undetermined

**Age:** 3 years

**Stature:** undetermined

**State of preservation:** S+ P+

Fragments of a child skeleton collected from the bucket of an excavator together with grave H 6a/2020. Only several fragments of the cranial vault, a pyramid of the right temporal bone, the crown of one tooth (26), fragments of femoral diaphyses, left (?) tibia, right clavicle, and a fragment of a rib have been preserved.

#### Grave H 7/2020 (Fig. 4, 11)

**Sex:** female

**Age:** 15–16 years

**Stature:** 159.5 ± 4.49 cm (F1)

**State of preservation:** S+++ P+++

An exceptionally well-preserved skeleton placed in the supine position with extended extremities, skull on base, mandible in anatomical position, oriented from SW to NE.

Gracile skeleton with low muscular attachments, complete skull, only parts of frontal and right parietal bones were damaged during excavation. Dentition is complete, third molars except 28 are not erupted. The postcranial skeleton is also more or less complete, with only some small bones of legs and arms and some epiphyses of long bones of limbs missing.

**Anatomical variants:** lambdoid ossicles, left parietal notch ossicle, left supratrochlear foramen. Only 11 pairs of ribs (the 12th pair is rudimentary, on the right side only in the form of about 5 mm tubercle of the body of Th12).

**Workload indices:** hyperplatymeric, no pilaster, eurycnemic. Significant enthesal changes are visible on the attachment points of the levator veli palatini muscle (on caudal surfaces of the temporal pyramid ventromedially from the carotid canal).

**Pathological changes:** dental calculus, periodontitis, linear DEH on front teeth. Porosity is visible on the endocranial surfaces of the cranial bones (especially on the left) and the inner surface of the mandibular rami cranially from the mandibular foramina. The third cervical vertebra was probably destroyed by a pathological process, the spinous process of the second cervical vertebra points up, and the corresponding process of the fourth cervical vertebra is compressed somewhat downward. On the affected surfaces of both spinal processes, there are signs of an ongoing



**Fig. 11.** Grave H 7/2020 – field photograph. Photo by T. Chrástek.

**Obr. 11.** Hrob H 7/2020 – snímek z terénu. Foto T. Chrástek.

pathological process that ‘pushed’ them. Furthermore, a calcified object was found in the region of the upper cervical spine – probably a fragment of calcified soft tissue. Inflammatory changes are visible in the radial and coronoid fossae of the right humerus.

**Grave goods:** A bronze ring, five ceramic fragments, fragments of bird bones, probably a domestic chicken (*Gallus gallus f. domestica*), and a vertebral fragment of a pig (*Sus scrofa f. domestica*).

#### Grave H 8/2020

**Sex:** undetermined

**Age:** 8–9 years

**Stature:** undetermined

**State of preservation:** S0 P+

In the area between graves H 6/2020 and H 7/2020, a few bones, apparently originally belonging to a single individual, were dug up by the excavator. They were labelled as grave H 8/2020, although it is not entirely certain that this was a separate grave. Only the left maxilla with several teeth (deciduous 63–65 and permanent 22, 26, and 27), fragments of vertebrae and ribs, bones of the right forearm with several metacarpals, fragments of pelvic bones of both sides and the proximal part of the right femur were preserved.

**Pathological changes:** linear DEH on tooth 22, cribra femoralia on the right femoral neck.

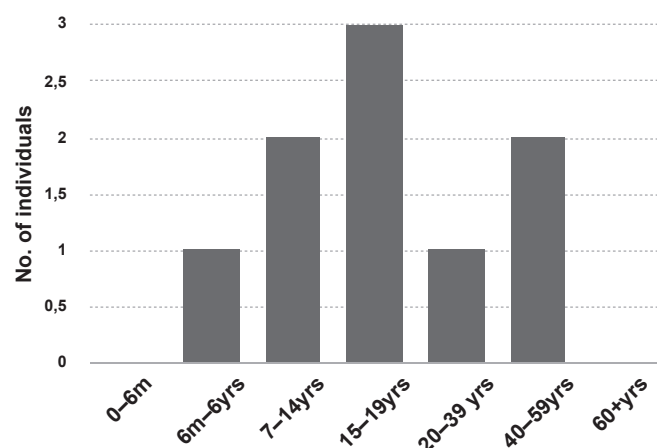
## 4.2. Basic anthropological analysis

A summary of the basic anthropological data on the skeletal remains found is given in Tab. 1, Graph 1 gives an idea of the age structure of the studied group of individuals. Most of the skeletal remains belonged to subadults (six of the nine skeletons recovered). These included three juveniles aged 15–17 (grave H 2/2020), 15 (H 3/2020) and 15–16 (H 7/2020), two of whom are presumed to be female (almost certainly so for grave H 7/2020, based on pelvic morphology, and probably so for grave H 2/2020, based on skull morphology and grave goods), two children aged 8–9 (graves H 1/2020 and H 8/2020), and one three-year-old child deposited in grave 6b/2020. Children’s graves are more likely to escape attention due to their generally smaller size and depth, so their prevalence amongst the ‘forgotten’ graves is not surprising. Only three graves belonged to adults – a young woman aged 20–30 (grave H 4/2020) and a middle-aged man and woman (graves H 5/2020 aged 40–60 and H 6a/2020 aged 45–65 respectively). In the case of grave H 6/2020, therefore, there is a possibility it was a double grave.

|                          | Sex     | Age (years) | Stature (cm) | State of preservation | Anatomical variants                                                                                                                                                          | Workload indices | Pathological changes                                                                                                                                                                                                                                                                                                                                                    | Grave goods                                                                                                       |
|--------------------------|---------|-------------|--------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>H 1</b><br>(Fig. 5)   | ?       | 8–9         |              | S+ P+                 | Lambdoid ossicles, bilateral thinning of the occipital plate in the area of the transverse sulcus with perforation on the right (avascular connection?)                      |                  | Linear DEH, possible scurvy                                                                                                                                                                                                                                                                                                                                             | 3 complete grape-shaped silver earrings, a fragment of the fourth one, a decorative button (gombík), 1 iron knife |
| <b>H 2</b><br>(Fig. 6)   | Female? | 15–17       |              | S+ P+                 |                                                                                                                                                                              |                  | Linear DEH                                                                                                                                                                                                                                                                                                                                                              | 2 pairs of silver globe-shaped earrings                                                                           |
| <b>H 3</b><br>(Fig. 7)   | ?       | 15          |              | S+++ P+               | Absent parietal foramina                                                                                                                                                     |                  | Linear DEH, dental calculus, cribra orbitalia, periosteal new bone formation on the frontal and parietal bones and mandible, abnormal porosity of cervical vertebrae                                                                                                                                                                                                    | 7 gold-plated silver grape-shaped earrings, 1 ring-shaped earring, 1 iron knife                                   |
| <b>H 4</b><br>(Fig. 8)   | Female  | 20–30       |              | S++ P0                | Agenesis of 38, abnormal vascular connection on the mastoid part of the right temporal bone                                                                                  |                  | Linear DEH, dental calculus, 6 dental caries, abnormal vascular impressions on the endocranial surface, porosity on the palatal processes of both maxillae                                                                                                                                                                                                              | Fragments of 3 grape-shaped and 1 globe-shaped earring                                                            |
| <b>H 5</b><br>(Fig. 9)   | Male    | 40–60       | 165.6        | S+ P++                | Absent parietal foramina                                                                                                                                                     | Hyperplatymeric  | 1 intravital tooth loss, inflammation changes in the 38 alveolus, a lesion on the popliteal surface of the right femur                                                                                                                                                                                                                                                  |                                                                                                                   |
| <b>H 6a</b><br>(Fig. 10) | Female  | 45–65       |              | S+++ P++              | Lambdoid ossicles, left asterionic ossicle, zygomaticofacial foramen bilaterally doubled                                                                                     | Platymeric       | 2 intravital tooth losses, 2 dental caries, periodontitis, dental calculus, osteoarthritic changes in the interphalangeal joints of the left foot                                                                                                                                                                                                                       | 1 silver grape-shaped earring                                                                                     |
| <b>H 6b</b>              | ?       | 3           |              | S+ P+                 |                                                                                                                                                                              |                  |                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                   |
| <b>H 7</b><br>(Fig. 11)  | Female  | 15–16       | 159.5        | S+++ P+++             | Lambdoid ossicles, left parietal notch ossicle, left supratrochlear foramen, 11 pairs of ribs, enthesal changes on the attachment points of the levator veli palatini muscle | Hyperplatymeric  | Linear DEH, dental calculus, periodontitis, porosity on the endocranial surfaces and on the inner surface of the mandibular ramus above the mandibular foramina. C3 destroyed, spinous processes of C2 and C4 deformed, a calcified object found in the region of the upper cervical spine, inflammatory changes in the radial and coronoid fossae of the right humerus | 1 bronze ring, 5 ceramic fragments                                                                                |
| <b>H 8</b>               | ?       | 8–9         |              | S0 P+                 |                                                                                                                                                                              |                  | Linear DEH, cribra femoralia                                                                                                                                                                                                                                                                                                                                            |                                                                                                                   |

Tab. 1. Basic data on skeletal remains included in the analysis.

Tab. 1. Přehled základních údajů hodnocených kosterních pozůstatků.



Graph 1. Representation of age categories of the skeletal series.

Graf 1. Věková struktura zkoumaného souboru.

The preservation of individual skeletons varied greatly. As expected, the remains of the child from grave H 8/2020 were in the worst condition, having been picked up by an excavator during overburden stripping. Therefore, the exact location and parameters of this grave are unknown. In contrast, the best-preserved skeleton was that of a young girl from grave H 7/2020.

The occurrence of epigenetic traits (anatomical variants) cannot be more comprehensively assessed in such a limited population. It can only be stated that lambdoid ossicles and absent parietal foramina occurred repeatedly in the studied individuals, as well as abnormal vascular connections. However, these conditions are common in Great Moravian populations (see e.g. Velemínský et al. 2008; Fojtová 2012).

As far as metric evaluation is concerned, relevant results could be obtained only for the skeletons from graves H 5/2020, H 6/2020, and H 7/2020. For graves H 5/2020 and H 7/2020, it was possible to calculate the probable stature. In the case of male from grave H 5/2020, it was 165.6 ± 4.1 cm, slightly below the average in the context of the Great Moravian population (see



|                                        | H 6/2020 |                   | H 7/2020             |               |
|----------------------------------------|----------|-------------------|----------------------|---------------|
| Cranial index (I1)                     | 72.19    | Dolichocranial    | 77.78                | Mesocranial   |
| Length-height index (I2)               | 67.91    | Chamaecranial     | 74.27                | Orthocranial  |
| Breadth-height index (I3)              | 94.07    | Metriocranial     | 95.49                | Metriocranial |
| Transversal frontal index (I12)        | 81.03    |                   |                      |               |
| Transversal frontoparietal index (I13) | 69.63    | Eurymetop         | 69.92                | Eurymetop     |
| Foramen magnum index (I33)             |          |                   | 109.09               |               |
| Facial index (I38)                     |          |                   | 82.68 Chamaeprosopic |               |
| Upper facial index (I39)               | 62.96    | Hyperlepten       | 53.54                | Mesen         |
| Malar upper face index (I39(1))        | 74.73    | Chamaeprosopic    | 75.56                | Leptoprosopic |
| Left orbital index (I42)               | 89.47    | Hypsiconch        | 91.43                | Hypsiconch    |
| Nasal index (I48)                      | 65.22    | Hyperchamaerrhinc | 48.94                | Mesorrhinc    |
| Palatal index (I58)                    |          |                   | 73.21 Leptostaphylic |               |
| Alveolar index (I60)                   | 102.97   | Mesognathous      | 101.10               | Mesognathous  |

**Tab. 2.** Craniometric evaluation of selected skulls.

**Tab. 2.** Kraniometrické hodnocení vybraných lebek.

e.g. Stloukal 1999, 384; it must be taken into account that the results obtained by different authors and methods may differ, so these data should be taken with some reserve). The girl from grave H 7/2020 measured approximately 159.5 ± 4.49 cm, which is equivalent to the average statures of Great Moravian women, but the growth of this girl was not yet complete at the time of her death, so theoretically her adult stature could have been slightly higher. Cranial measurements and indices could only be determined for two individuals (graves H 6/2020 and H 7/2020), and their summary is given in Tab. 2.

### 4.3. Health status and traces of workload

Dental and periodontal diseases were the most frequent pathologies in the studied group of skeletons. The most common of them was linear dental enamel hypoplasia (DEH), which was present in six individuals. DEH is considered a marker of non-specific stress during childhood such as weaning, starvation, infections, etc. (Schultz et al. 1998, 299), and is very common in early medieval populations (see also Trefný, Velemínský 2008; Jarošová 2012; Přichystalová et al. 2019, 240). Dental caries and associated intravital tooth loss were observed in all three adults, who had eight carious lesions and three proven intravital tooth losses in total, with the teeth of the young female from grave H 4/2020 being with six carious lesions the most affected (Fig. 12). In addition, in two of caries, the infection spread from the pulp cavity through the root canal and formed periapical lesions around the root tip, one of which was drained by a fistula. Two adults and two juveniles suffered from dental calculus (mineralized bacterial plaque). The inflammatory process caused by the bacterial stimulation of plaque leads first to gingivitis and later to loss of bone and periodontitis (Strohm, Alt 1998, 234), which was observed in two cases.

Surprisingly, the latter disease was, except for the elderly female from grave H 6a/2020, also present in the 15–16-year-old girl from grave H 7/2020, who was moreover seriously ill – her third cervical vertebra was probably destroyed by some type of osteolytic neoplasm (Fig. 13, 14, 15) and the subsequent damage to the spinal cord may have been the likely cause of the girl's death, as spinal cord trauma above C4 level usually leads to total paralysis, including respiratory muscles.

The occurrence of porous and hyperostotic skeletal lesions, such as orbital or femoral cribra (Fig. 16, 17), is probably associated with nutritional stress (especially anaemia) (Horáková et al.

2004, 146). They are found predominantly in children and juveniles, which also corresponds to the cases described here (subadults at the age of 8–9 and 15 years, respectively). Subperiosteal new bone formation with porous lesions on the skull and limb bones in the child's skeleton from grave H 1/2020 (Fig. 18) may indicate that the individual suffered from scurvy (see Ortner, Ericksen 1997;



**Fig. 12.** Grave H 4/2020 – crowns of 2nd and 3rd lower right molars affected by dental caries. Photo by M. Fojtová.

**Obr. 12.** Hrob H 4/2020 – korunky 2. a 3. dolní pravostranné stoličky zasažené zubním kazem. Foto M. Fojtová.



**Fig. 13.** Grave H 7/2020 – the spinous process of the 2nd cervical vertebra pushed up by a pathological process (probably of a neoplastic aetiology). Photo by M. Fojtová.

**Obr. 13.** Hrob 7/2020 – spinální výběžek 2. krčního obratle směřující vzhůru následkem patologického procesu (pravděpodobně novotvaru). Foto M. Fojtová.



**Fig. 14.** Grave H 7/2020 – partially destroyed 3rd cervical vertebra (upper) and 4th cervical vertebra (lower) with spinal process pushed downwards. Photo by M. Fojtová.

**Obr. 14.** Hrob H 7/2020 – částečně destruovaný 3. krční obratel (nahore) a 4. krční obratel se spinálním výběžkem vychýleným kaudálně (dole). Foto M. Fojtová.



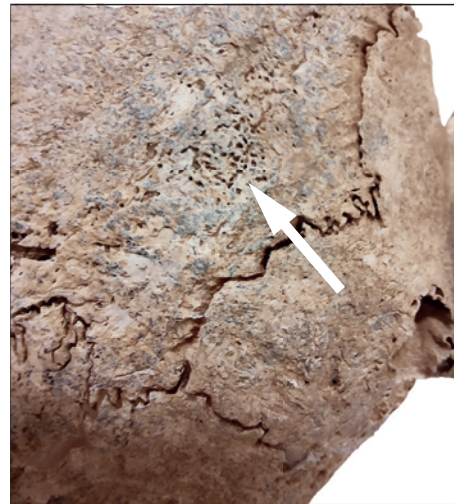
**Fig. 17.** Grave H 8/2020 – cribra femoralia on the right femoral neck. Photo by M. Fojtová.

**Obr. 17.** Hrob H 8/2020 – cribra femoralia na krčku pravého femuru. Foto M. Fojtová.



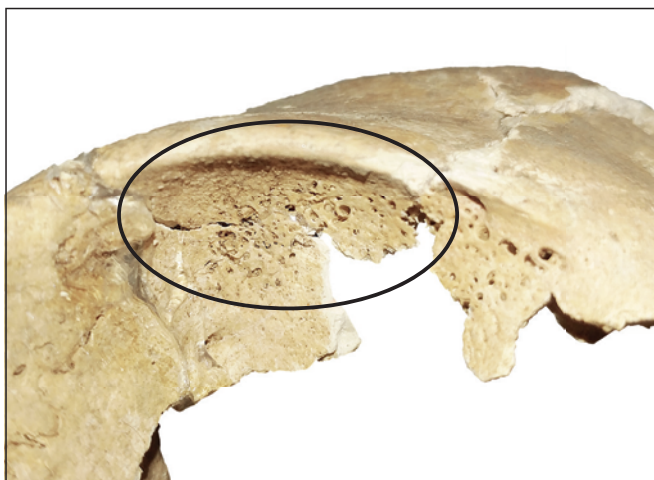
**Fig. 15.** Grave H 7/2020 – a calcified object found in the region of the upper cervical spine. Photo by M. Fojtová.

**Obr. 15.** Hrob H 7/2020 – kalcifikovaný objekt nalezený v oblasti horní krční páteře. Foto M. Fojtová.



**Fig. 18.** Grave H 1/2020 – subperiosteal new bone formation and porosity on the right parietal and temporal bone. Photo by M. Fojtová.

**Obr. 18.** Hrob H 1/2020 – subperiostální kostní novotvorba sporozitou na pravé temenní a spánkové kosti. Foto M. Fojtová.



**Fig. 16.** Grave H 3/2020 – cribra orbitalia (porotic type) on the right orbital roof. Photo by M. Fojtová.

**Obr. 16.** Hrob H 3/2020 – cribra orbitalia porotického typu na stropu pravé očníce. Foto M. Fojtová.

Waldron 2009, 132). The porotic lesions on the skeleton of the juvenile individual from grave H 3/2020 could be of similar aetiology.

Abnormal vascular impressions on the endocranial surface, found in the skull of young female from grave H 4/2020, are probably impressions of abnormal branching of the arteria meningea media, which is most often a manifestation of an ongoing inflammatory process or subdural haemorrhage, usually caused by trauma or systemic disease; a combination of both factors is also possible (Ortner 2003, 93; Lewis 2004). There was also one case of osteoarthritis (age-related degenerative joint changes). A shallow lesion of unclear aetiology on the right femur of a male from grave H 5/2020 (Fig. 19) adds to the range of pathologies.

In only three individuals the skeleton of the lower limbs was sufficiently preserved to calculate workload indices, which are important markers of physical load. The decreasing value of the cnemic index of the tibia is considered to be a sign of increased load on the muscle groups active in the squatting position (Velemínský, Dobisíková 2000). The decreasing value of the platymeric index of the femur indicates the degree of antero-posterior plating of the upper third of the diaphysis caused by increased activity of the gluteus maximus and the hip adductors



**Fig. 19.** Grave H 5/2020 – a lesion of unclear aetiology on the right popliteal surface of the femur. Photo by M. Fojtová.

**Obr. 19.** Hrob H 5/2020 – léze nejasné etiologie na facies poplitea pravé stehenní kosti. Foto M. Fojtová.

(Stránská 2014, 337). Finally, the increasing value of the pilasteric index of the femur indicates an increased load on the muscles connecting to the middle part of the linea aspera femoris, the function of which is knee joint flexion. While the cnemic index of the tibia in all three measurable individuals takes on values of meso- or eurycnemia and pilaster index values were low or medium and are therefore not indicative of a more intense load on the relevant muscle groups, the values of the platymetric index in all three measurable individuals indicate a high load on the relevant muscle groups, which is usually related to frequent walking (or running) in difficult terrain or over longer distances (Cassano et al. 1999). Similar results are known from other contemporary populations (Tvrdý 2012, 41; Stránská 2014, 338; Fojtová, Galuška 2022, 32, etc.)

## 5. Grave goods

Of the seven grave pits uncovered, six contained grave goods in varying degrees of preservation, and one was without finds (grave H 5/2020). In one case (grave H 8/2020) the (non)presence of grave finds cannot be assessed due to the circumstances of its discovery. Notable among the graves were those in which children or younger individuals and one young woman were buried. Except for the girl from grave H 7/2020, equipped with ‘only’ a bronze ring decorated with beating, all the other burials were placed in the graves with silver jewellery (earrings). Of these, the 15-year-old individual from grave H 3/2020 stands out with eight silver earrings, seven of which were grape- and one ring-shaped.

Earrings with a bilateral (less often only the lower one) grape made of rings of granules, found in graves H 1/2020, H 4/2020, and H 6/2020, belong to the most typical and widespread Great Moravian jewellery (Fig. 20). It is worth noting that some of these earrings have one end of the lower arch split and twisted into an eyelet, which is sometimes considered a chronologically younger element. In grave H 2/2020, a young woman or girl was provided with two pairs of earrings decorated with four globes on the lower

arch, the surface of which is decorated with ornaments set with granules. Again, this is one of the more common types of Great Moravian earrings found in most of the settlements associated with the life (and death) of the social elite of the time. One fragment found also appears to belong to a 6-globe earring, which only began to appear in the late 9th century. Both the grape- and globe-shaped earrings belong to the group of so-called luxurious Veligrad jewellery (e.g. Galuška 2013, 223–251, Ungerman 2021).

Among other decorations coming from the examined graves, it is worth noting the aforementioned ring and a bronze spherical button with a surface covered with rings of twisted wire, which, although not belonging to the Veligrad jewellery group, may occur together with them in one grave (see grave H 1/2020). Two iron knives in the remains of sheaths and five pottery fragments complete the grave finds. These were discovered in grave H 7/2020 and are likely to have been placed on the young woman’s chest during the burial ceremony.

The rich equipment of children and young individuals in graves from the Great Moravian period is a known fact. The jewellery and ornaments, as well as miniature weapons and spurs in the graves, suggest that these children were already a full-fledged part of society at an early stage of their lives and that these finds are attributes of their membership in important Moravian families of the 9th century (e.g. Profantová 2005; Galuška 2022, 72–74, 149–150; Kouřil 2022, 263–266).

## 6. Conclusions

With more than 2,000 uncovered graves, the burial site in Staré Město – ‘Na Valách’ is one of the most extensive necropolises in Great Moravia. More graves continue to be discovered, even in places that for many years were thought to have been completely explored. This is demonstrated by the latest additions from 2020. As no further archaeological discoveries were expected at the site



**Fig. 20.** Grape-shaped earrings from graves H 1/2020 (1, 2, 10), H 3/2020 (3–9), and H 4/2020 (11, 12). Photo and graphic by T. Chrátsek.

**Obr. 20.** Hrozníčkovité náušnice z hrobů H 1/2020 (1, 2, 10), H 3/2020 (3–9) a H 4/2020 (11, 12). Foto a grafika T. Chrátsek.

of the rescue excavation, most of the graves were significantly damaged when the topsoil was removed. The graves may have escaped the attention of archaeologists in the 1940s and 1950s because of their location on the edges of the research areas. As might be expected, the majority of the graves belong to children and juveniles. These tend to be smaller and shallower, with gracile skeletons that are preserved in a worse condition.

Although almost all the graves contained rich grave goods, the nature of which indicates that they belonged to representatives of the upper social class of early medieval Moravia, the anthropological analysis showed both many mainly dental pathologies and traces of workload related to intensive walking.

From the chronological point of view, based on the findings, the graves can be dated to the younger phase of the burial ground ‘Na Valách’, i.e. from the second half of the 9th century to the beginning of the 10th century. Following the planned revision and evaluation of anthropological data, particularly from earlier excavations at this site and their overall synthesis within a broader context, the findings from 2020 will contribute another valuable stone to the mosaic of the overall picture of the life of the inhabitants of one of the main centres of the Great Moravian Empire.

### Acknowledgements

The article appears through the institutional support of long-term conceptual development of research institutions provided by the Ministry of Culture (ref. MK000094862).

The authors would like to thank Jakub Langr (Center for Slavonic Archaeology, Moravian Museum, Brno) for cooperation on field research in difficult winter conditions, Martina Roblíčková (Anthropos Institute, Moravian Museum, Brno) for the taxonomic classification of the osteoarchaeological material, Jan Holub (Department of Clinical Imaging, St. Anne’s University Hospital, Brno) for making radiographs, and Lenka Vargová and Kateřina Vymazalová (Department of Anatomy, Faculty of Medicine, Masaryk University, Brno) for consulting on some paleopathological cases.

### References

- Aufderheide, A. C., Rodríguez-Martín, C. 1998:** *The Cambridge Encyclopedia of Human Paleopathology*. Cambridge: Cambridge University Press.
- Boldsen, J. L., Milner, G. R., Konigsberg, L. W., Wood, J. W. 2002:** Transition Analysis. A New Method for Estimating Age from Skeletons. In: R. D. Hoppa, J. W. Vaupel (eds.): *Paleodemography. Age Distribution from Skeletal Samples*. Cambridge Studies in Biological and Evolutionary Anthropology 31. Cambridge: Cambridge University Press, 73–106.
- Brůžek, J. 2002:** A Method for Visual Determination of Sex, Using the Human Hip Bone. *American Journal of Physical Anthropology* 117(2), 157–168. DOI: 10.1002/ajpa.10012. Available also from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.10012>.
- Brůžek, J., Santos, F., Dutailly, B., Murail, P., Cunha, E. 2017:** Validation and reliability of the sex estimation of the human os coxae using freely available DSP2 software for bioarchaeology and forensic anthropology. *American Journal of Physical Anthropology* 164(2), 440–449. DOI: 10.1002/ajpa.23282. Available also from: <https://onlinelibrary.wiley.com/doi/10.1002/ajpa.23282>.
- Capasso, L., Kennedy, K. A. R., Wilczak, C. A. 1999:** *Atlas of Occupation Markers on Human Remains*. Journal of Paleontology. Monographic Publication 3. Teramo: Edigrafital S.p.A.
- Drozdová, E. 2004:** *Panoráma biologické a sociokulturní antropologie. Modulové učební texty pro studenty antropologie a „příbuzných“ oborů 18. Základy osteometrie*. Scientia. Brno: Nadace Universitas Masarykiana.
- Ferembach, D., Schwidetzky, I., Stloukal, M. 1980:** Recommendations for Age and Sex Diagnoses of Skeletons. *Journal of Human Evolution* 9(7), 517–549. DOI: 10.1016/0047-2484(80)90061-5.
- Fojtová, M. 2012:** Analýza výskytu epigenetických znaků na kosterních pozůstatcích staroslovanské populace z pohřebiště Dolní Věstonice – Na Pískách. In: I. Jarošová et al. (eds.): *Antropologická analýza raně středověké populace z Dolních Věstonic – Na Pískách*. Anthropos 34 (N. S. 26). Brno: Moravské zemské muzeum, 50–59.
- Fojtová, M., Galuška, L. 2022:** Zvláštní raně středověké hroby objevené ve Starém Městě – „Na Valách“ a problém jejich interpretace. *Přehled výzkumů* 63(2), 9–60. DOI: 10.47382/pv0632-02. Available also from: [https://www.arub.cz/wp-content/uploads/PV-63\\_2-01.pdf](https://www.arub.cz/wp-content/uploads/PV-63_2-01.pdf).
- Galuška, L. 2002:** Deset let archeologických výzkumů Moravského zemského muzea v oblasti Starého Města (1992–2001). *Přehled výzkumů* 43, 51–69. Available also from: [https://arub.cz/wp-content/uploads/03\\_p\\_v\\_43\\_2001\\_galuska.pdf](https://arub.cz/wp-content/uploads/03_p_v_43_2001_galuska.pdf).
- Galuška, L. 2004:** Velkomoravské hroby revenantů ze Starého Města. In: G. Fusek (ed.): *Zborník na počesť Dariny Bialekovej*. Archaeologica Slovaca Monographiae. Communicationes VII. Nitra: Archeologický ústav SAV, 81–90.
- Galuška, L. 2013:** *Hledání původu. Od avarských bronzů ke zlatu Velké Moravy*. Brno: Moravské zemské muzeum.
- Galuška, L. 2022:** *Uherské Hradiště-Sady. 500 Years of Christianity in Central Europe. II. Archaeological Analysis*. Brno: Moravské zemské muzeum.
- Galuška, L., Langr, J. 2021:** Staré Město. *Přehled výzkumů* 62(2), 254. Available also from: [https://www.arub.cz/wp-content/uploads/62\\_2\\_07.pdf](https://www.arub.cz/wp-content/uploads/62_2_07.pdf).
- Hochmanová-Vávrová, V. 1962:** Velkomoravské pohřebiště ve Starém Městě „Na Valách“. Výzkum v letech 1957–1959. *Acta Musei Moraviae, Scientiae sociales* XLVII, 201–270.
- Horáček, L., Vargová, L., Strouhal, E. 2004:** *Panoráma biologické a sociokulturní antropologie. Modulové učební texty pro studenty antropologie a „příbuzných“ oborů 15. Základy paleopatologie*. Scientia. Brno: Nadace Universitas Masarykiana.
- Hrubý, V. 1955a:** *Staré Město. Velkomoravské pohřebiště „Na valách“*. Monumenta Archaeologica III. Praha: ČSAV.
- Hrubý, V. 1955b:** Základy kostela na staroslovanském pohřebišti ve Starém Městě „Na valách“. *Památky archeologické* XLVI(2), 265–306. Available also from: <https://lurl.cz/Gr2x7>.
- Jarošová, I. 2012:** Nеспецифický stres v dolnověstonické populaci Na Pískách na modelu sklovinných hypoplasií zubů. In: I. Jarošová et al. (eds.): *Antropologická analýza raně středověké populace z Dolních Věstonic – Na Pískách*. Anthropos 34 (N. S. 26). Brno: Moravské zemské muzeum, 96–105.
- Kouřil, P. 2022:** Honosné ostruhy z Mikulčic. In: L. Poláček et al.: *Velkomoravské elity z Mikulčic*. Brno: Archeologický ústav AV ČR, Brno, 255–268.
- Leatherman, G. 1971:** Two-digit system of designating teeth-FDI submission. *Australian Dental Journal* 16(6), 394. DOI: 10.1111/j.1834-7819.1971.tb03438.x. Available also from: <https://lurl.cz/yaA5k>.
- Lewis, M. 2004:** Endocranial lesions in non-adult skeletons. Understanding their aetiology. *International Journal of Osteoarchaeology* 14(2), 82–97. DOI: 10.1002/oa.713. Available also from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/oa.713>.
- Lovejoy, C. O. 1985:** Dental Wear in the Libben Population. Its Functional Pattern and Role in the Determination of Adult Skeletal Age at Death. *American Journal of Physical Anthropology* 68(1), 47–56. DOI: 10.1002/ajpa.1330680105. Available also from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.1330680105>.

- Meindl, R. S., Lovejoy, C. O. 1985:** Ectocranial Suture Closure. A Revised Method for the Determination of Skeletal Age at Death Based on the Lateral-Anterior Sutures. *American Journal of Physical Anthropology* 68(1), 57–66. DOI: 10.1002/ajpa.1330680106. Available also from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.1330680106>.
- Niederle, L., Zelnitius, A. 1929:** Slovanské pohřebiště ve Starém Městě u Uherského Hradiště. *Zprávy Československého státního ústavu archeologického* 1, 1–35.
- Novotný, V. 1986:** Sex Determination of the Pelvis Bone. A Systems Approach. *Anthropologie* XXIV(2–3), 197–206. Available also from: <http://puvodni.mzm.cz/Anthropologie/article.php?ID=918>.
- Ortner, D. J. 2003:** *Identification of Pathological Conditions in Human Skeletal Remains*. Amsterdam: Academic Press. DOI: 10.1016/B978-0-12-528628-2.X5037-6.
- Ortner, D. J., Erickson, M. F. 1997:** Bone Changes in the Human Skull Probably Resulting from Scurvy in Infancy and Childhood. *International Journal of Osteoarchaeology* 7(3), 212–220. DOI: 10.1002/(SICI)1099-1212(199705)7:3<212::AID-OA346>3.0.CO;2-5. Available also from: <https://url.cz/4umGo>.
- Přichystalová, R., Kalová, K., Boberová, K. 2019:** *Břeclav – Pohansko IX. Pohřební areály z Jižního předhradí (archeologicko-antropologická studie)*. Brno: Masarykova univerzita. Available also from: <https://digilib.phil.muni.cz/handle/11222.digilib/143742>.
- Profantová, N. 2005:** Die Elite im Spiegel der Kindergräber aus dem 9. und 10. Jahrhundert in Böhmen. In: P. Kouřil (Hrsg.): *Die frühmittelalterliche Elite bei den Völkern des östlichen Mitteleuropa (mit einem speziellen Blick auf die großmährische Problematik). Materialien der internationalen Fachkonferenz, Mikulčice, 25.-26.05.2004*. Spisy Archeologického ústavu AV ČR Brno 25. Brno: Archäologisches Institut der Akademie der Wissenschaften der Tschechischen Republik Brno, 313–334. Available also from: [https://www.arub.cz/wp-content/uploads/Die-fruhmittelalterliche-Elite\\_optimal.pdf](https://www.arub.cz/wp-content/uploads/Die-fruhmittelalterliche-Elite_optimal.pdf).
- Schaefer, M., Black, S., Scheuer, L. 2009:** *Juvenile Osteology. A Laboratory and Field Manual*. Burlington, London, San Diego: Academic Press. DOI: 10.1016/B978-0-12-374635-1.X0001-X.
- Schultz, M., Carli-Thiele, P., Schmidt-Schultz, T. H., Kierdorf, U., Kierdorf, H., Teegen, W. R., Kreutz, K. 1998:** Enamel Hypoplasias in Archaeological Skeletal Remains. In: K. W. Alt et al. (eds.): *Dental Anthropology. Fundamentals, Limits and Prospects*. Wien: Springer, 293–311. DOI: 10.1007/978-3-7091-7496-8\_16. Available also from: [https://link.springer.com/chapter/10.1007/978-3-7091-7496-8\\_16](https://link.springer.com/chapter/10.1007/978-3-7091-7496-8_16).
- Sjøvold, T. 1990:** Estimation of Stature from Long Bones Utilizing the Line of Organic Correlation. *Human Evolution* 5, 431–447. DOI: 10.1007/BF02435593. Available also from: <https://link.springer.com/article/10.1007/BF02435593>.
- Stloukal, M. 1999:** Antropologická charakteristika pravěkých a středověkých populací. In: M. Stloukal et al. (eds.): *Anthropologie. Příručka pro studium kostry*. Praha: Národní muzeum, 383–385.
- Stloukal, M., Hanáková, H. 1978:** Die Länge der Längsknochen altslawischer Bevölkerungen unter besonderer Berücksichtigung von Wachstumsfragen. *Homo* 29(1), 53–69.
- Stránská, P. 2014:** Antropologická analýza lidských kostrových pozůstatků z raně středověkého pohřebiště v Praze-Střešovicích. *Archaeologia historica* 39(1), 331–345. Available also from: <https://digilib.phil.muni.cz/handle/11222.digilib/130295>.
- Strohm, T. F., Alt, K. W. 1998:** Periodontal Disease – Etiology, Classification and Diagnosis. In: K. W. Alt et al. (eds.): *Dental Anthropology. Fundamentals, Limits and Prospects*. Wien: Springer, 227–246. DOI: 10.1007/978-3-7091-7496-8\_13. Available also from: [https://link.springer.com/chapter/10.1007/978-3-7091-7496-8\\_13](https://link.springer.com/chapter/10.1007/978-3-7091-7496-8_13).
- Trefný, P., Velemínský, P. 2008:** Linear Enamel Hypoplasia in an Early Medieval Population of Great Moravia. In: P. Velemínský, L. Poláček (Hrsg.): *Studien zum Burgwall von Mikulčice VIII*. Spisy Archeologického ústavu AV ČR Brno 27. Brno: Archäologisches Institut der Akademie der Wissenschaften der Tschechischen Republik, Brno, v. v. i., 141–149. Available also from: [https://mikulcice.arub.cz/wp-content/uploads/2016/06/SBM8\\_web.pdf](https://mikulcice.arub.cz/wp-content/uploads/2016/06/SBM8_web.pdf).
- Tvrđý, Z. 2012:** Metrické vyhodnocení dolnověstonické populace Na Pískách. In: I. Jarošová et al. (eds.): *Antropologická analýza raně středověké populace z Dolních Věstonic – Na Pískách*. Anthropos 34 (N. S. 26). Brno: Moravské zemské muzeum, 38–49.
- Ubelaker, D. H. 1978:** *Human Skeletal Remains. Excavation, Analysis, Interpretation*. Chicago: Aldine Publishing Company.
- Ungerman, Š. 2021:** *Frühmittelalterliche Ohringe mit vier Blechbeeren in Nord-, Mittel- und Südosteuropa. Eine Fallstudie zur Entstehung des großmährischen Prachtschmuck*. Spisy Archeologického ústavu AV ČR Brno 69. Brno: Archäologisches Institut der Akademie der Wissenschaften der Tschechischen Republik, Brno. Available also from: [https://www.arub.cz/wp-content/uploads/spisy\\_arub\\_69\\_CZ\\_verze.pdf](https://www.arub.cz/wp-content/uploads/spisy_arub_69_CZ_verze.pdf).
- Velemínský, P., Dobisíková, M. 2000:** Projevy nespecifické zátěže na kostrách našich předků. *Archeologické rozhledy* LII(3), 483–506. Available also from: <https://url.cz/vrqQi>.
- Velemínský, P., Dobisíková, M., Stránská, P., Velemínská, J. 2008:** Biological Diversity of Non-metric Traits in the Great Moravian Population – The Comparison of the Mikulčice Power Centre and its Hinterland. In: P. Velemínský, L. Poláček (Hrsg.): *Studien zum Burgwall von Mikulčice VIII*. Spisy Archeologického ústavu AV ČR Brno 27. Brno: Archäologisches Institut der Akademie der Wissenschaften der Tschechischen Republik, Brno, v. v. i., 265–304. Available also from: [https://mikulcice.arub.cz/wp-content/uploads/2016/06/SBM8\\_web.pdf](https://mikulcice.arub.cz/wp-content/uploads/2016/06/SBM8_web.pdf).
- Waldron, T. 2009:** *Palaeopathology*. Cambridge manuals in archaeology. New York: Cambridge University Press. DOI: 10.1017/CBO9780511812569. Available also from: <https://url.cz/zumlB>.
- Zelnitius, A. 1932:** Pokračování výkopu pohřebiště „Na valách“ ve Starém Městě. *Sborník velehradský. Nová řada* 3, 45–53.

## Resumé

Záchranný archeologický výzkum na stavbě objektu Cyrilometodějského centra Slovákého muzea (který provedlo Centrum slovanské archeologie Moravského zemského muzea ve spolupráci se Slovákým muzeem; viz Galuška, Langr 2021) v těsné blízkosti Památníku Velké Moravy ve Starém Městě – „Na Valách“ (obr. 1, 2) proběhl v lednu a únoru roku 2020. Protože lokalita byla prokopána již ve 40. a 50. letech 20. století Vilémem Hrubým, archeologické nálezy se zde už příliš nepředpokládaly. I přesto však bylo nalezeno několik hrobů a rozptýlených kostí, při starším výzkumu zřejmě opomenutých. Nově objevené hroby ležely ve štěrkovém podloží první říční terasy řeky Moravy v jižní části pohřebiště svažující se k jihu směrem k Jezuitské ulici. Šest z nich (H 1/2020 – H 6/2020) se nacházelo asi 30 až 35 m jihovýchodně od apsidy raně středověkého kostela „Na Valách“, jeden (H 7/2020) byl vzdálenější, nacházel se 45 m jižně od kostela (obr. 3), kosterní pozůstatky označené jako H 8/2020 byly vyryty bagrem při skrývce v prostoru mezi H 6/2020 a H 7/2020. Hrobové jámy, orientované převážně ve směru SZ–JV nebo JZ–SV (obr. 4), se až na výjimky ve štěrko-pískovém podloží nijak barevně neprojevovaly. Dodatečně bylo zjištěno, že se nacházely na rozhraní výkopových sezón 1949 a 1950, mezi nimiž zůstal neprozkoumaný prostor. Tyto skutečnosti byly pravděpodobně důvodem, proč nedošlo k objevení hrobů už v minulosti. Při strojové skrývce byla bohužel většina hrobů poškozena. To se následně odrazilo ve stupni zachovalosti kosterního materiálu. Nejlépe se zachoval hrob H 7/2020, v nejhorším stavu byly naopak ostatky z hrobu H 8/2020, který zničil

bagr téměř kompletně. Zachovalost lebek byla obecně mírně lepší než postkranálních skeletů. Antropologická analýza identifikovala kosterní pozůstatky celkem devíti jedinců. Vzhledem k nejasným stratigrafickým vztahům není zřejmé, zda se v případě hrobu H 6/2020 nejednalo o dvojhrob. V ostatních hrobových jámách se nacházel vždy pouze jediný nebožtík (obr. 5–11).

Stupeň zachovalosti kosterního materiálu byl hodnocen pomocí křížků zvláště pro lebku (S) a postkranální skelet (P) (podrobněji viz Fojtová, Galuška 2022, 12). Pro určení pohlaví dospělých jedinců byly primárně použity metody založené na intersexuálních rozdílech na pánvi (Novotný 1986; Brůžek 2002; Brůžek et al. 2017) a lebce (Ferembach et al. 1980). Ke stanovení dožitého věku u nedospělých jedinců byla přednostně využívána metoda hodnotící stupeň erupce zubů (Ubelaker 1978), hodnocen byl i stav maturace skeletu (Schaefer et al. 2009). Jako pomocné kritérium sloužily délky dlouhých kostí (Stloukal, Hanáková 1978). K odhadu biologického věku u dospělých byl přednostně použit volně dostupný program ADBOU (Boldsen et al. 2002). Jako pomocné kritérium sloužila hlavně metoda hodnotící stupeň abraze zubů (Lovejoy 1985) a stupeň uzávěru lebečních švů (Meindl, Lovejoy 1985). Údaje zjištěné výše zmíněnými metodami byly sumarizovány a výsledný věk byl stanoven jako pravděpodobný průnik získaných věkových intervalů. Pro metrické zpracování kosterního materiálu dospělých jedinců byla použita soustava rozměrů podle Drozdové (2004), výška postavy byla stanovována metodou podle Sjøvolda (1990). Pro rozlišení jednotlivých zubů a jejich polohy je v textu nejčastěji užito dvojčíselného označování zubů (tzv. zubní kříž) (Leatherman 1971). Zdravotní stav zkoumaných jedinců byl posuzován převážně podle kritérií Aufderheideho a Rodríguez-Martína (1998), Ortnera (2003), Horáčkové et al. (2004) a Waldrona (2009).

Souhrn základních antropologických údajů o nalezených kosterních pozůstatcích obsahuje tabulka 1 a graf 1. Většina kosterních pozůstatků patřila nedospělým jedincům, kterých bylo vykopáno šest. Šlo o tři juvenilní jedince ve věku 15–17 let (H 2/2020), 15 (H 3/2020) a 15–16 let (H 7/2020), u dvou z nich předpokládáme ženské pohlaví (u H 7/2020 téměř jistě – podle morfologie pánve, u H 2/2020 pravděpodobně – na základě morfologie lebky a hrobové výbavy), dvě děti shodně ve věku 8–9 let (H 1/2020 a H 8/2020) a jedno cca tříleté dítě (H 6b/2020). Pouze tři hroby patřily dospělým, a to mladé ženě ve věku 20–30 let (H 4/2020) a muži a ženě ve středním věku (H 5/2020 a H 6a/2020). Relevantních výsledků metrického hodnocení bylo možno dosáhnout pouze u koster H 5/2020, 6a/2020 a 7/2020. Pro H 5/2020 a H 7/2020 bylo možné vypočítat pravděpodobnou výšku postavy, která v případě muže H 5/2020 dosahovala 165,6 ± 4,1 cm, dívka z hrobu H 7/2020 pak měřila zhruba 159,5 ± 4,49 cm. Lebeční míry a indexy bylo možné zjistit pouze u dvou jedinců (H 6a/2020 a H 7/2020), jejich souhrn podává tabulka 2.

Nejrozšířenějším onemocněním ve zkoumaném souboru byly choroby zubů a chrupu – dentální sklovinné hypoplasie, zubní kaz (obr. 12), zubní kámen a periodontitis. Nalezeny byly také dva případy kostních projevů anémií (cribra orbitalia/femoralia – obr. 16, 17). Na dětském skeletu H 1/2020 byly pozorovány pravděpodobné projevy kurdějí (obr. 18), příčinou smrti dívky z hrobu H 7/2020 byl nejspíše patologický proces probíhající v horním úseku krční páteře (obr. 13–15). Následkem nízkého podílu dospělých jedinců se ve zkoumaném souboru vyskytlo minimum degenerativně produktivních chorob (náznak artritických změn v interfalangeálních kloubech levé nohy u H 6a/2020). Mělká léze nejasné etiologie byla zaznamenána na pravé stehenní kosti muže H 5/2020 (obr. 19). Pouze u tří jedinců

bylo možné vypočítat indexy tělesné zátěže (platymerický a pilastrický index femuru a knemický index tibie). Zatímco hodnoty knemického a pilastrického indexu byly nízké nebo střední a nesvědčí tedy o intenzivnějším zatížení příslušných svalových skupin, hodnoty platymerického indexu u všech tří měřených jedinců ukazují na vysoké zatížení příslušných svalových skupin, které obvykle souvisí s častou chůzí (nebo během) v náročném terénu nebo na delší vzdálenosti (Capasso et al. 1999).

Z celkového počtu osmi hrobů obsahovalo nálezy hrobové výbavy šest z nich, jeden byl bez nálezů (5/2020), u jednoho (H 8/2020) nelze přítomnost hrobové výbavy vzhledem k okolnostem objevu posoudit. Dívka z hrobu H 7/2020 byla vybavena bronzovým prstenem zdobeným vybějením, v ostatních hrobech byly nalezeny stříbrné šperky (náušnice; obr. 20). Z nich vyniká hrob H 3/2020 s osmi kusy (sedm hrozníčkových a jedna kroužková). V hrobu H 2/2020 byla mladá žena vybavena dvěma páry náušnic opatřených na dolním obloučku čtyřmi bubínky, jejichž povrch zdobí motivy sestavené z granulek. Jedno nalezené torso zřejmě náleží také šestibubínkové náušnici, které se začínají vyskytovat až v pokročilém 9. století. Jak hrozníčkové, tak i bubínkové náušnice patří do skupiny tzv. honosného veligradského šperku (např. Galuška 2013, 223–251, Ungerman 2021). Z dalších okras pocházejících z prozkoumaných hrobů stojí za pozornost výše zmíněný prsten a bronzový gombík s povrchem pokrytým prstenci z torďovaného drátku (H1/2020). Hrobové nálezy ještě doplňují dva železné nože ve zbytcích pochev (H 1/2020 a H 3/2020) a pět keramických zlomků v hrobu H 7/2020. Šperky a okrasy v hrobech naznačují, že děti už v raném období svého života byly plnohodnotnou součástí společnosti, a že ony nálezy jsou vlastně atributy jejich příslušnosti k významným moravským rodinám 9. století (např. Profantová 2005; Galuška 2022, 72–74, 149–150; Kouřil 2022, 263–266).

Z chronologického hlediska lze na základě nálezů hroby datovat do mladší fáze pohřebiště „Na Valách“, tj. od 2. poloviny 9. století do počátku 10. století. Po plánované revizi a vyhodnocení antropologických dat zejména z dřívějších výzkumů na této lokalitě a jejich zařazení do širšího kontextu se nálezy z roku 2020 jistě stanou dalším cenným kamínkem v mozaice celkového obrazu života obyvatel jednoho z hlavních center Velkomoravské říše.

## Contacts

### Martina Fojtová

Moravian Museum  
Anthropos Institute  
Zelný trh 6  
CZ-659 37 Brno  
mfojtova@mzm.cz  
ORCID: 0000-0002-3444-4107

### Luděk Galuška

Moravian Museum  
Centre for Slavonic Archaeology  
Velehradská třída 537  
CZ-686 01 Uherské Hradiště  
lgaluska@mzm.cz  
ORCID: 0000-0002-1374-651X

### Tomáš Chrástek

Slovak Museum  
Smetanovy sady 179  
CZ-686 01 Uherské Hradiště  
tomas.chrastek@slovackemuzeum.cz  
ORCID: 0009-0008-5668-9210