

## SOME INTERESTING FINDINGS IN AN ABOLISHED BRNO CEMETERY IN ANTONÍNSKÁ STREET

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### Abstract

In 1999, skeletal remains of over a thousand individuals were recovered during a preservation archaeological research in Antonínská Street in Brno. This extensive osteological set comes from a former city cemetery in Malá Nová, which was used as the burial place for people from five Brno parishes between 1785 and 1883.

An anthropological and palaeopathological analysis of the skeletons revealed traces of a post-mortem opening of the cranial cavity on ten skulls found there (four men, three women, and three children). In all the cases, the calvarias were removed by means of a typical cut through the glabella, squamous bones, and the protuberantia occipitalis externa. The execution of the cuts clearly points to pathological or anatomical autopsies.

In Brno, the first official autopsies were performed in 1871 at the dissecting room of the Provincial Public General Hospital in Pekařská Street (now St. Anne's Faculty Hospital). The first head of the Department of Pathology was Eduard Klenka z Vlastimilů, who equipped his laboratory in line with modern principles of the renowned Viennese pathologist of Czech origin, Karel Rokitský. According to reports from that time, a total of 52 corpses (32 men and 20 women) were delivered to the laboratory in the first year of its operation. Post-mortems were performed on 35 of them. The most frequent causes of death at that time included infectious diseases, particularly tuberculosis, syphilis, smallpox, and typhus fever.

The skeletal remains with traces of autopsy reported here are among the oldest evidence of post-mortem performed in Moravia and, together with similar findings from the cemetery at the St. Kliment church in Prague, they give us a better insight into the level of development of the medical science in the 18th and 19th centuries.

### Key words

Syphilis, Tuberculosis, Inflammations, Osteomyelitis

### INTRODUCTION

In 1999, skeletal remains of over a thousand individuals were recovered during the preservation archaeological research in Antonínská Street in Brno. This extensive osteological material comes from the former municipal cemetery in Malá Nová, which was used as the burial place for people from five Brno parishes between 1785 and 1883 (1). A detailed medical and anthropological analysis revealed traces of surgical sections on ten skeletons. In the Czech lands, findings of surgical sections on skeletons of historical populations are rare. The skeletal

remains from the St. Kliment church cemetery in the Bubny district of Prague, where three skulls opened by a transversal section were found, were an exception (2). Moreover, the tomb filling of one of the autopsied individuals contained a preparation slide complete with a histological section, and fragments of a glass rod in the place of the original chest cavity were found in another tomb.

The present study gives a detailed description of the only direct evidence discovered to date of the activities of the first prosecutors in Moravia, and offers a comparison between the historical material and iconographic and contemporaneous written documents. The new data reported here help to better understand the public health situation among Brno populations in the 18th and 19th centuries, and assess the overall quality and possibilities of health care at that time.

#### MATERIAL AND METHODS

The skeletal material from the Malá Nová cemetery contains bodily remains of typical municipal populations from the 18th and 19th centuries. A total of 354 grave pits situated in the centre of the oldest part of the cemetery were opened in the course of the preservation archaeological research. In the studies of the graves, skeletal remains of at least 1,083 individuals were found, which suggests that the grave pits were used repeatedly. This assumption was corroborated by different degrees of preservation of the skeletons or their parts. The most frequent grave objects were symbols of faith, i.e. crosses and fragments of rosaries. Personal items like medallions and rings were less frequent (3).

The study of the osteological set had two basic parts. One was a detailed medical and anthropological analysis using classical descriptive and metric methods. The criteria for sex determination included the methods of *Borovanský* (4), *Howells* (5), *Phenice* (6), *Černý* (7), *Dokládál* (8) and *Brůžek* (9). Age estimates were based on the facts of *Flecker* (10), *Stloukal* and *Hanáková* (11), *Ubelaker* (12), *Florkowski* and *Kozłowski* (13), *Valloise* (14) in the *Rösings'* (15) modification, *Linc* (16), *Szilvássy* (17), *Vlček* (18), and *Lovejoy* (19). The metric and morphoscopic characteristics on the skeletons were ascertained by standard procedures, but only if the degree of skeleton preservation allowed it according to the methods of *Martin* and *Saller* (20) and *Knussmann* (21). To determine the bodily height of females and males, the *Bach's* (22) and *Breitinger's* (23) tables, respectively, were used.

The assessment of palaeopathological findings was based mainly on the criteria by *Jaffe* (24), *Steinbock* (25), *Ortner* and *Putschar* (26), and *Aufderheide* and *Rodríguez-Martín* (27).

The other part of the research into the skeletal remains from the Malá Nová cemetery consisted in accumulating and evaluating iconographic and literary sources, and comparing them with the skeletal findings. The iconographic and literary sources studied included tomb identification plates, available tombstones, records from the register of births and deaths, most of which are kept in the Moravian Archives in Brno, Archives of the City of Brno, and the Museum of the City of Brno. The sources used are identified in the text.

#### RESULTS

A detailed anthropological analysis showed that the osteological set of at least 1,083 individuals from the Malá Nová cemetery included skeletal remains of 663 adults and 420 children. Characteristic male traits were found on 238 skeletons, and 208 skeletons were identified as belonging to females. Advanced decay of skeletons did not allow sexing in 217 cases. Most of the men died in the fourth or

fifth decennium. Over one third of the women died between the age of 20 and 30, probably in connection with pregnancy and childbirth. The rest of the female skeletons fell almost equally in all the other age categories. Less than one fourth of the remains of infantile skeletons were fetuses, newborns, and unweaned infants of less than one year of age.

Autopsy traces were identified on ten skulls found in graves 879, 885, 888 (*Fig. 1*), 1802, 1805 (*Fig. 2*), 1816, 1821 (*Fig. 3*), 1838, 1879, and 2802. Of the ten individuals autopsied, four were men, three were women, and three were children. A detailed overview of skeletal remains showing traces of surgical sections and their characteristics are in *Table 1*. In all of the cases found, the same method was used to open the skull cavity, i.e. the calvarias were removed by a clean cut along the transversal plane from the glabella or immediately above it through the squama of the temporal bone to the vicinity of the protuberantia occipitalis externa. A detailed examination of the damaged flat bones of the skull under the magnifying glass always revealed more or less clear traces of sawing along the cut without any symptoms of an intravital response. On one of the male skulls (grave 2802), a fragment of the occipital bone squama was broken off. This defect probably occurred when the cranium was prized open.

In the study of skeletons with traces of surgical sections, attention was also paid to symptoms of diseases that might have been the cause of death or the reason for the autopsy. No pathological changes were, however, found on any of the skeletons examined.

#### DISCUSSION

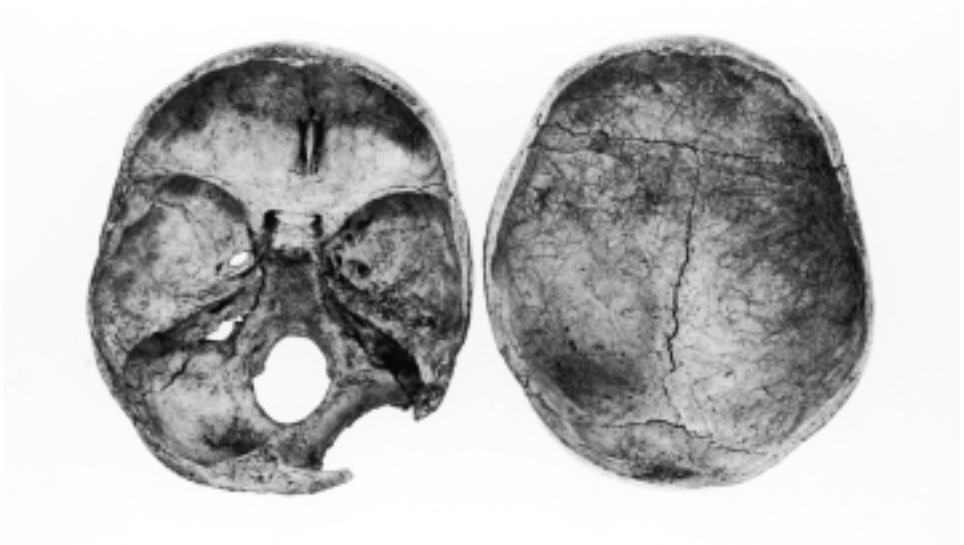
In the absence of any reparative processes, a macroscopic examination of the skulls with the calvarias removed sufficed to substantiate the conclusion that an autopsy had been performed. The identical technique of making the sections and their similar positioning on all of the skulls suggest a standardized autopsy procedure which, moreover, was almost identical to the one used today (e.g. 28). Thanks to the accurate dating of the material, it is safe to assume that the autopsies were performed for pathological rather than for strictly anatomical purposes. An attempt at establishing a medical school in Brno, the so-called Collegium anatomicum Brunense (29, 30), failed in 1753 and, as a result, no autopsies for instruction purposes were performed in the Moravian capital at the time when the Malá Nová cemetery was being used. It follows that all the sections on the skulls from that cemetery were made in the process of autopsies for pathological and anatomical purposes, i.e. autopsies whose main purpose was to ascertain the main disease, its complications, the cause of death, all pathological changes in the organism, and also to assess the effectiveness of the prior treatment.

The authors used written records to find out where and by whom the autopsies may have been performed. The period when the Malá Nová cemetery was used

Table 1

Graves with opened skulls

Grave No.	Skulls with section	All skeletal remains in the graves
879	child, infans I (3–4 years)	child, infans I (2.5–4 years)
885	child, infans II (7–8 years) female, adultus I (20–30 years) female, adultus I (20–30 years) child, infans I (0–3 month) child, infans I (1–1.5 years) child, infans I (1.5–2 years) child, infans II (?)	male, adultus I (20–30 years)
888	young male, juvenis (18–20 years) male, senilis (over 60 years) child, infans I (1.5–2 years)	male, maturus II (50–60 years)
1802	male, maturus I (40–50 years) male, maturus I–II (about 50 years) child, infans I (about 3 years) sex indeterminable?	male, adultus II (30–40 years)
1805	female, adultus I (20–30 years) female, ? child, infans II (13–14 years) sex indeterminable?	male, adultus II (30–40 years)
1816	male, maturus II (50–60 years) male, adultus I (20–30 years) male, ? female, adultus I (20–30 years) female, maturus II (50–60 years) child, infans I (3–4 years) child, infans I (5–6 years)	male, adultus I (20–30 years)
1821	child, infans II (11–12 years) male, ? female, adultus I (20–30 years) child, infans II (11–12 years)	male, adultus I (20–30 years)
1838	female, maturus I (40–50 years) male, maturus I (40–50 years) male, senilis (over 60 years) female, ? female, ?	male, adultus II (30–40 years)
1879	female, adultus II (30–40 years) female, ? child, infans II (6–7 years) child, infans II (8–10 years)	male, ?
2802	male, adultus II (30–40 years)	male, adultus I (20–30 years)



*Fig. 1*

Traces of the post-mortem opening of the cranial cavity on a young male skull (Grave No. 888, male, 18–20 years).



*Fig. 2*

A typical cut through the glabella, squama of temporal bones and the near region of the external occipital protuberantia – lateral view (Grave No. 1805, female, 20–30 years).



*Fig.3*

The post-mortem opening of the cranial cavity on a child skull – frontal view (Grave No. 1821, infans II, 11–12 years).

was the time of major changes in health services in Brno, both with regards to their organization (as part of Theresian and Josephian reforms) and quality, as a result of the introduction of new scientific findings in medicine. One of the most important medical facilities at that time not only in Brno but in the whole of Moravia was the Provincial Public General Hospital in Pekařská Street (now St. Anne's Faculty Hospital) founded in 1786. The hospital provided care to both men and women, and included not only a maternity ward but also a foundling hospital and an orphanage. It follows from its reports submitted to superior institutions that the newly opened hospital had to cope with desperate shortages of medical personnel (350–400 patients per one physician), the deceased were autopsied by attending physicians, and work in the mortuary was considered an extra load. The building of the dissecting room and the completion of the mortuary complex including laboratories for microscopic and chemical examination created good conditions for the development of pathological anatomy as an independent science. The first official autopsies at the new Brno mortuary were performed in 1871. The first head of the institute was Eduard Klenka of Vlastimilů, a fully qualified pathologist, who managed his mortuary in accordance with modern principles of the distinguished Viennese pathologist of the Czech origin, *Karel Rokitanský*. Contemporaneous documents mention 52 corpses (32 men and 20 women) brought to the mortuary in the first year of its existence, and autopsies performed in 35 cases (31).

All the data discovered about the Provincial Public General Hospital, and especially the data on the newly built mortuary, which was the leading institution of its kind in Moravia at that time, seem to suggest that the autopsies on the bodily remains from the Malá Nová were performed there. However, the fact that the deceased from that hospital were normally buried at the nearby cemetery in Pekařská Street casts some doubt on that assumption. The Municipal Cemetery in Malá Nová was under the patronage of five Brno parishes (parishes of St. James, St. John, St. Peter, St. Thomas, and St. Magdalene), which shared in the cemetery's management and operation, and that was the reason why it was used as the final resting place for their parishioners (32). It cannot be ruled out, however, that some people from the area treated in the Provincial Public General Hospital died and were autopsied there.

Another hospital where the sections found on the skeletal remains studied may have been performed is the paediatric hospital of SS. Cyril and Methodius (*Fig. 4*). That paediatric hospital was founded in 1846 by the Brno physician *Ferdinand Dworzak* in 60 Hřbitovní Street (now Kounicova Street) in a close vicinity of a cemetery, and its operation was financed from subventions and gifts. It was a hospital that provided treatment for children aged between 1 and 12 from poor families. During its fifty years of existence, it provided treatment to over ten thousand inpatients, and the number of outpatients exceeded a hundred thousand.



*Fig.4*

The paediatric hospital of SS. Cyril and Methodius in Hřbitovní Street (now Kounicova Street) in Brno from 1846–1898, where the sections found on the child skulls studied may have been performed (Original in the Archives of the City of Brno).

The authors, however, found no details about autopsies performed in that hospital during the existence of the Municipal Cemetery. Written materials from 1891, i.e. from shortly before the cemetery was closed, indicate that all those who died in the paediatric hospital were autopsied, and that the Brno physicians who provided consultancy services during examinations free of charge to poor children included also the prosecutor from the Provincial Public General Hospital (33). None of the facts presented above rules out the possibility that autopsies on the three children whose skeletal remains were found at the Municipal Cemetery were performed in the old paediatric hospital.

The list of possible health care institutions where Brno citizens in the 18th and 19th centuries may have been autopsied also includes the hospital and almshouse run by the order of Brothers of Mercy founded in 1747. There are, however, several reasons why the assumption that the skeletal remains studied come from that institution is rather unlikely. From its foundation, it was used as a social institution for the poor rather than as a hospital, the quality of health care was very poor and it was far below the expertise of physicians from the Provincial Hospital. The hospital used the Old Brno cemetery at the abolished church of St. Wenceslas (34). Also very important is the fact that that hospital was for men only, while skulls with traces of surgical sections belonging also to women and children were found at the Municipal Cemetery.

To complete the list, the hospital run by the order of Elizabethan Sisters opened in 1750 in 78 Kamenná Street in the Old Brno district should be included. Like the Brothers of Mercy hospital, their hospital was more of a charitable institution than a health care establishment when it was opened. Its medical qualities were rather poor and it provided care to women only. The hospital also had a convent and a cemetery where those who died there were buried (31, 35). In view of all these facts, the authors ruled this hospital out as an institution where the autopsies may have been performed.

#### CONCLUSIONS

The skulls with traces of the autopsy found at the Municipal Cemetery in Malá Nová are a direct evidence of the activities of the first Brno pathologists. The autopsies were probably performed between 1871 and 1883, i.e. after the first mortuary was opened in Brno and pathological anatomy established as an independent branch of the medical science, and before the Municipal Cemetery was closed down. The question whether the bodily remains were autopsied only at the Provincial Public General Hospital in Pekařská Street, or whether the children's autopsies were performed as part of consultancy examinations at the first paediatric hospital in Hřbitovní Street remains, however, open.

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## NĚKTERÉ ZAJÍMAVÉ NÁLEZY ZE ZRUŠENÉHO BRNĚNSKÉHO HŘBITOVA NA ANTONÍNSKÉ ULICI

### S o u h r n

V roce 1999 byly v rámci záchranného archeologického výzkumu na Antonínské ulici v Brně vyzvednuty kosterní pozůstatky více než tisíce jedinců. Tento rozsáhlý osteologický soubor pocházel z bývalého brněnského městského hřbitova na Malé Nové, který sloužil k pohřbívání obyvatel pěti brněnských farností v letech 1785 až 1883.

Při antropologické a paleopatologické analýze nalezených koster byly na deseti lebkách (čtyř mužů, tři žen a tři dětí) objeveny stopy po postmortálním otevření dutiny lební. Ve všech případech byla klenba lební snesena typickým sekčním řezem vedeným od glabely nebo těsně nad ní, přes šupiny obou temporálních kostí až do blízkosti protuberantia occipitalis externa. Podle způsobu provedení se jednalo evidentně o patologicko-anatomickou pitvu.

V Brně se oficiálně pitvalo od roku 1871 na prosektuře v Zemské veřejné všeobecné nemocnici na Pekařské ulici (dnes Fakultní nemocnice u sv. Anny). Prvním přednostou ústavu byl Eduard Klenka z Vlastimilů, který zařídil prosekturu podle moderních zásad významného vídeňského patologa českého původu, Karla Rokitanského. Podle dobových zpráv bylo již v prvním roce po otevření ústavu do jeho prostor dovezeno 52 mrtvol (32 mužů a 20 žen) a pitváno 35 těl zemřelých. Nejčastější příčinou smrti byly v té době infekční choroby, zejména tuberkulóza, syfilis, právě neštovice a skvrnitý tyfus.

Studované brněnské kosterní pozůstatky se stopami po sekci patří k nejstarším přímým dokladům o uskutečněných pitvách na Moravě a spolu s obdobnými nálezy ze hřbitova u kostela sv. Klimenta v Praze doplňují naše znalosti o úrovni lékařské péče z 18. a 19. století.

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