



MARTA DOČKALOVÁ, BLANKA VACKOVÁ, HANA ELIÁŠOVÁ, DANIEL DVOŘÁK

ANTHROPOLOGICAL CHARACTERISTICS OF THE MEDIEVAL MORAVIAN LUXEMBURGS

ABSTRACT: *In 1999, archaeological research of the tomb of Margrave Jost of Luxemburg was carried out at St. Thomas church in Brno, Czech Republic. In the same year, also remains of Margrave Prokop of Luxemburg were extracted from the tomb in the Brno Carthusian monastery. Skeletal remains of both members of the royal family, brothers Jost and Prokop, were subjected to anthropological-medical research (Dočkalová 1999). The study of skeletons of the Luxemburg brothers proved identical genetic features and pathological changes typical of the royal dynasty (Dočkalová et al. 2001).*

The present article focuses on the anthropological characteristics of brothers Jost and Prokop of Luxemburg in comparison with the result of anthropological study (Vlček 1999) of their uncle, the Czech King and Roman Emperor Charles IV (1346–1378).

KEY WORDS: *Moravia – Middle Ages – Royal family members – Luxemburg brothers – Morphological description – Anthropological analysis*

INTRODUCTION

The founders of the royal family, Czech king John of Luxemburg and Eliza Přemyslid, ruled in Bohemia in 1310–1457. Their first-born son Charles IV was King of Bohemia and Roman Emperor (1346–1378). At the turn of 1349–1350 Charles IV conferred to his younger brother John Henry the Margraviate of Moravia. The history of medieval Moravia is connected with the rule of margraves John Henry and his son Jost of Luxemburg. The period represents the climax and utmost expansion of the Middle Ages in Moravia, when the Luxemburg royal family ruled the country as an independent political entity.

John Henry made of Brno an important economic, political and legal centre of Moravia. In 1350 he founded in Brno the Augustinian monastery with St. Thomas church, including the tomb for the royal Luxemburg family. In 1375, margrave John Henry and his sons Jost, John Soběslav and Prokop founded in Brno a Carthusian monastery with the church of the Holy Trinity.

In his testament, John Henry entrusted the rule over the country to his oldest son Jost. Jost of Luxemburg, Moravian margrave, future Roman king, ruled in Moravia in 1376–1411. He died in 1411 and he was buried in the royal tomb at St. Thomas church in Brno.

His brother Prokop of Luxemburg died in 1405 and was buried at the monastic Carthusian church of the Holy Trinity.

HISTORY OF RESEARCH

Archive materials document that the royal tomb with remains of margrave Jost of Luxemburg in St. Thomas church was opened by members of the Augustinian monastery in 1752. In 1999, a year before the celebrations of "The 650th Anniversary of the Luxemburgs' Rule in Moravia", the Luxemburg tomb was opened for a second time. On 20 January 1999, the remains of margrave Jost, duke of Luxemburg, elector of Brandenburg and uncrowned Roman king, were extracted from the tomb.



FIGURE 1. Skull of Jost of Luxemburg, lateral view.

During 1999, archaeological research of St. Thomas church and anthropological-medical research of skeletal remains of Jost of Luxemburg were carried out.

The research scheme, as well as the elaboration of a comprehensive anthropological-medical study confirming the authenticity of the analysed skeleton as that of Jost of Luxemburg, has been realised in interdisciplinary collaboration of several institutions.

On 18 March 1999, Jost of Luxemburg was buried again, in presence of the Honorary Consul of Luxemburg and many other important personalities.

In 1975, the renovation of the former Carthusian monastery in Brno (Královo Pole, today Brno University of Technology) was carried out, as well as the first archaeological and construction research of the monastery. Under the floor of the monastic church of the Holy Trinity a stone grave was discovered with skeletal remains of Margrave Prokop of Luxemburg (Bukovský, Cejnková 1995). Vlček and Flodrová (1987) published a brief historical and anthropological communication of research results. In 1988, the remains of Prokop of Luxemburg were deposited into a metallic coffin and buried in the nave of the Holy Trinity church in Brno.

On 4 October 1999, the coffin with remains of Margrave Prokop of Luxemburg was taken out of the Carthusian monastery tomb. Once the revision anthropological-medical research was finished, the remains were again deposited into the church tomb on 15 December 1999.

METHODS

Anthropological analysis focused on the evaluation of skeletal remains of the brothers Jost and Prokop. The

diagnosis of morphological features was carried out using methods of historical anthropology. For the analysis of skeletal material, standard methods were used, according to Martin-Saller (1928), Olivier (1969), Knussman (1988). Description and identification of finds was made using a combination of tried procedures according to methodological and anatomical publications of Bass (1987), Nemeskéri, Harsányi, Acsádi (1960), Ubelaker (1974).

The skull and postcranial skeletons went through morphoscopic and metric assessment aimed at the definition of sex and age. The degree of cranial sutures ossification was evaluated according to Broca's scale and calculated from Schmitt–Tamáska equation (1970). Dental age was assessed according to Gustafson (1977) – Kilián (1981) method with the use of modified equations after Pilin – Šturmankin (1987). Skeletons were evaluated according to the degree of bone ossification (Ferembach *et al.* 1979) and changes in symphyseal head relief according to categories proposed by Neméskery, Harsányi, Acsádi (1960). Body height was calculated from the length of long bones by the method of Breitingner (1937), Pettener *et al.* (1980), Novotný (1980), Novotný *et al.* (1996), Steel (1986).

RESULTS

Skeleton of Margrave Jost of Luxemburg (1354–1411)

State of preservation: The skeleton was incomplete and damaged, only the skull was well preserved. Most of the ribs and short bones were missing. All the bones except for the skull were strongly damaged post mortem, with numerous traumatic interferences.

TABLE 1. Craniometric characteristics of the skulls of Jost of Luxemburg and Charles IV.

Measure (Knussmann 1988)		Jost (dx/sin)	Charles IV (dx./sin) (according to Vlček)	Prokop (dx/sin)
1.	g-o	179	182	173
2.	g-i	169	181	—
2a.	n-i	136	177	—
8.	eu-eu	143	157	145
9.	ft-ft	88	110	100
10.	co-co	116	128	—
15.	ba-ba	20.1	25	—
16.	fol-fol	28	32	28
17.	ba-b	118	133	120
23.	go^op^g	530	548	—
44.	ek-ek	104	111	—
45.	zy-zy	135	143	—
47.	n-gn	111	140	—
48.	n-pr	68	86	—
51.	mf-ek	44/45.5	45/43	—
52.	orbit height	39/37	37/38	—
54.	apt-apt	27	30	—
55.	n-ns	51	60	—
61.	ekm-ekm	61	75	64
66.	go-go	97	98	111
69.	id-gn	28	42	—
70.	go-kdm	77	75/78	61
71.	Minimum ramus breadth	33/-	47/47	—
72.	Frontal profile angle	85°	83°	—
73.	Nasal profile angle	90°	82°	—
74.	Alveolar profile angle	73°	85°	—
79.	Angle of mandibular rami	110°	60°	—

Index (Knussman 1988)				
I 1	M8/M1	79.9 (mesocrany)	86.26 (hyperbrachycrany)	83.8 (brachycrany)
I 2	M17/M1	65.5 (chamaecrany)	73.07 (hypsicrany)	69.4 (chamaecrany)
I 3	M17/M8	82.5 (eurycrany)	84.7 (tapeinocrany)	82.7 (tapeinocrany)
I 13	M9/M8	61.5 (stenometopic)	66.88 (metriometopic)	69.0 (eurytmetopic)
I 38	M47/M45	82.2 (euryprosopy)	97.9 (hyperleptoprosopy)	89.1 (mesoprosopy)
I 39	M48/M45	50.4 (meseny)	60.1 (hyperlepteny)	54.7 (meseny)
I 42	M52/M51	88.6 (hypsiconchy)	82.2 (mesoconchy)	90.0 (hypsiconchy)
I 48	M54/M55	52.9 (chamaerrhiny)	50.0 (mesorrhiny)	—

The skull was of medium robust build, medium long and low even in the occipital area (Figure 1, Table 1). The glabella and supraorbital arches were medium sized; the front was narrow with slightly marked *tubera fontalia*. *Processi mastoidei* were large and slightly rotated. *Crista supramastoidea* was strongly formed. *Suturæ sagittalis*, *lambdoidea* and *sphenooccipitalis* were fully obliterated, *sutura coronalis* showed degree of ossification 1–4 (Broca). *Protuberantia occipitalis externa* was flat; muscle relief

at the *planum nuchale* was slightly developed. *Processi marginales* were developed on both sides.

The maxilla had a thick ossified rim on the buccal side (upper right – Figure 1). On the palatal side by the right molar (M3), there was in the vicinity of the tooth an obvious resorption after an infection (Figure 3), with the incidence of entesophytes.

The mandible was robust (Figures 1, 4), the *angulus mandibulae dx.* was everted and the *angulus mandibulae*



FIGURE 2. Skull of Jost of Luxemburg. X-ray in sagittal projection – Pacchion's granulations appear in the frontal area.



FIGURE 4. Mandible, occlusal view (Jost of Luxemburg).



FIGURE 3. Maxilla, occlusal view (Jost of Luxemburg).

sin. strongly damaged. Alveolar protuberances were hypertrophied and created border bone rims. On the left side of the mandible, by M1, there was a preserved cyst, consequence of an infectious disease (*Figure 1*). All the teeth (with the exception of upper incisors I 1, I 1) showed quite a high degree of physiological abrasion (*Figures 3, 4*). On most teeth (except for M2, M3 – M2, M3 from the maxilla) there were large spaces with darker pigmentation, proving full abrasion of tooth enamel up to the dentine. In

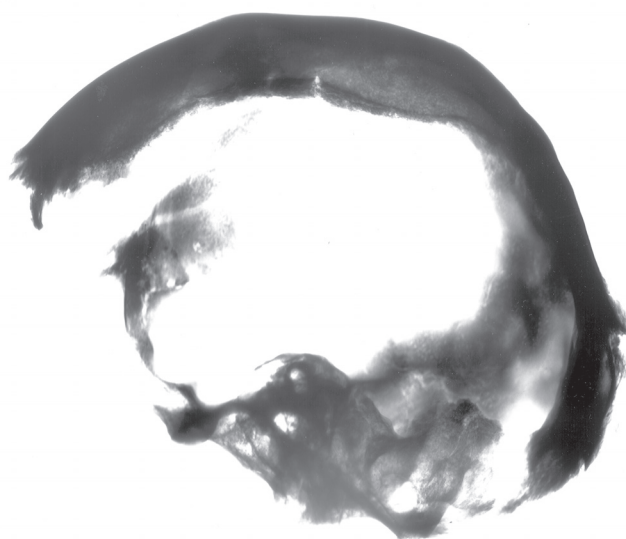


FIGURE 5. Skull of Prokop of Luxemburg. X-ray, lateral view.

TABLE 2. Metric evaluation of the postcranial skeletons of Jost and Prokop of Luxemburg and Charles IV.

		Jost		Prokop		Charles IV (according to Vlček)	
Humerus		dx	sin.	dx.	sin.	dx.	sin.
H 1	Maximum length	374.5	370	383?	378	348	341
H 5	Maximum diameter at mid-shaft	26	24	–	27	25	24
H 6	Minimum diameter at mid-shaft	22	21	–	25	20	21
H 7	Minimum circumference at mid-shaft	71	70	–	75	75	73
H 7a	Mid-shaft circumference	77	70	–	–	–	–
H 9	Transverse head diameter	–	52	–	49	52	51
Indexes							
H7/H1	Robusticity index	18.93	18.92		19.84	21.55	21.41
H6/H5	Index of mid-shaft cross-section	84.62	87.5		92.59	80.0	87.5
Radius							
R 1	Maximum length	–	280.5	297	289	–	–
R 2	Physiological length		266?	285	277	–	–
R 3	Minimum circumference	44	49	48	46	–	–
R 4	Transverse shaft diameter	17	16	18	16.1	–	–
R 5	Sagittal shaft diameter	14	13	15	15	–	–
Indexes							
R3/R2	Robusticity index		18.42	16.84	16.61	–	–
R5/R4	Index of mid-shaft cross-section	82.35	81.25	83.33	93.75	–	–
Ulna							
U 1	Maximum length	289	293	311	314	275	266
U 2	Physiological length	263	285	285	287	248	240
U 3	Minimum circumference	38	41	41	40	40	39
U 6	Oleocranon breadth	24	–	25	–	27	27
U 11	Anterior-posterior shaft diameter	15	16	14	15	–	–
U 12	Medial-lateral shaft diameter	19	21	19	20	–	–
Indexes							
U3/U2	Robusticity index	14.45	14.39	14.39	13.94	16.13	16.25
U1/U2	Index of lengths	109.9	102.81	109.1	109.41	110.89	110.83
U6/U2	Index of oleocranon breadth	9.13	–	8.77	–	10.89	11.25
U11/U12	Index of transverse cross-section	78.95	76.19	73.68	75.0	–	–

order to assess the age, a section was cut from the first and second mandibular incisors (I1, I2). Pacchion granulations are apparent on the X-ray of the frontal bone (Figure 2).

X-rays of the vertebrae show various degrees of damage and marked osteoporosis, reaching degree II (Adler 1983) on the vertebral bodies. On both vertebral bodies and faces, osteophytes and impressions – Schmorl's nodes – developed. *Os sacrum* had a sacral canal, not completely closed.

The sternum had preserved *manubrium sterni* and *corpus sterni*, with small osteophytes. The calculated value of length-width index was of 0.33.

Ribs: With the exception of *costa I dx.*, only rib fragments were preserved. Osteophytes developed on *corpi costae*, on the joint faces of *caput costae* as well as on *facies articularis tuberculi costae*.

Scapulae were incomplete, with numerous post-mortem traumas – notches. Osteophytes and increased bone

TABLE 3. Metric evaluation of the postcranial skeletons of Jost and Prokop of Luxemburg and Charles IV.

		Jost		Prokop		Charles IV (according to Vlček)	
Femur		dx.	sin.	dx.	sin.	dx.	sin.
F 1	Maximum length	512	527	522	539	476	487
F 2	Bicondylar length	511	524	516	535	473	481
F 4	Trochanter length	485	488	485	501	451	452
F 8	Mid-shaft circumference	110	108	100	103	100	103
F 13	Proximal epiphyseal length	107	112	111	110	100	103
F 15	Vertical head collum femoris	36	32	34	35	36	36
F 16	Transverse shaft diameter	275	285	27	25	33	30
F 18	Vertical head diameter	51	50	49	48	48.5	47
F 19	Transverse head diameter	50	49	49	47	48	47
F 20	Head circumference	161	157	156	150	152	151
F 21	Epicondylar breadth	75	83	85	83	85	85
Indexes							
(F6+F7)/F2	Robusticity index	–	–	12.60	12.34	13.11	13.51
F6/F7	Index of mid-shaft cross-section	–	–	116.67	120.0	121.43	116.67
F10/F9	Index of proximal mid-shaft cross-section	–	–	86.11	94.12	94.12	94.12
F19/F18	Index of head cross-section	98.04	98.0	100.0	97.92	98.97	100.0
F19+F18/F2	Index of head robusticity	19.77	18.89	18.99	17.76	20.40	19.54
Tibia							
T 1	Maximum length	437	439	444	446	392	399
T 1b	Medial length	436	433	–	–	–	–
T 4a	Max. diameter at tuberositas level	47	48	44	46	–	–
	Circumference at tuberositas	142	140	132	140	–	–
T 6	Distal epiphyseal breadth	54	56	50.5	50.0	55	56
T 8	Maximum diameter at mid-shaft	34	36	34	35	33	34
T 9	Transverse diameter at mid-shaft	28	27	24	26	26	26
T 10	Circumference at mid-shaft	110	97	90	91	93	94
T 10b	Minimum diaphyseal circumference	90	86	82	78	–	–
Indexes							
T9/T8	Index of mid-shaft cross-section	80.9	81.8	70.6	74.3	78.79	76.47
T9a/T8a	Cnemic index	20.6	19.6	–	–	–	–

porosity were apparent on the *cavitas glenoidalis dx. et sin.*

Clavicles were well preserved, with small osteophytes.

Humerus: The right humerus showed a post mortal cutting lesion on the *caput humeri* and *epicondylus medialis*. The left humerus was damaged post mortem in the area of *caput humeri*.

Radius: The right radius had a double post mortal fracture. Small osteophytes were observed on the *caput radii dx. et sin.* Harris' lines are obvious on the X-rays of both bones.

Ulna: A post mortal fracture was observed on the right

ulna. There were small osteophytes on both proximal and distal epiphyses of both bones.

Pelvis: *Ossa coxae* were preserved in one piece, showing a high degree of post mortal abrasion, causing a full perforation on the left bone. Pelvic bones were high and narrow, *fossa iliaca* was high and narrow, *crista iliaca* had apparent S-forms; *sulcus praeauricularis* was missing, *angulus subpubicus* had a span of 45°–60°, *arc compositus* was made by a simple line, the form of *foramen obturatum* could not be classified, *corpus ossis ischii* was wide, the great pelvis was medium wide. *Acetabulum dx.* was

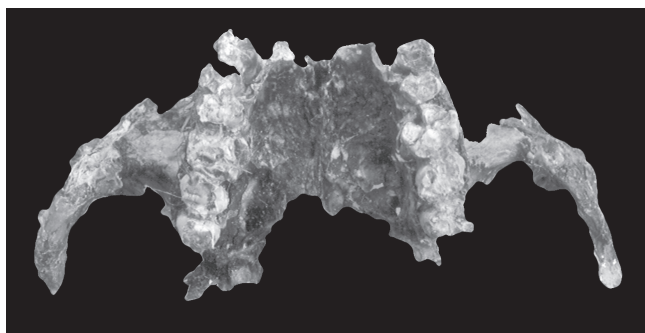


FIGURE 6. Maxilla, occlusal view (Prokop of Luxemburg).

prolonged in the vertical direction, with obvious arthrotic changes. Marked entesophytes and osteophytes developed on the *crista iliaca dx. et sin.* and on the *facies auricularis dx. et sin.* The sexuality index value was of 0.74 and determined male sex according to Neméskery, Harsányi, Acsádi (1960).

Femur: The right femur showed cutting post mortal damage in the area of *epicondylus medialis*, *epicondylus lateralis* on the *crista intertrochanterica* and *trochanter minor*. Higher degree of obrasion and post mortal damage were obvious on the *caput femoris*. Fossae Allen and Walmsley's facets were apparent on the femoral heads. Osteophytes developed on proximal and distal epiphyses. X-rays show medullar cavity reaching above the *trochanter minor*; in the *collum femoris* and *trochanter major et minor* there appeared cavities in the spongiosis. The corticalis is thinned, corresponding to age category V according to Ferembach *et al.* (1979).

The tibiae showed numerous slash post mortal lesions on the epiphyses dorsal side. Osteophytic accumulations were apparent on proximal and distal epiphyses of both bones. Entesophytes appeared on distal epiphyses of both bones. There were bone spines on the *tuberculum intercondylare mediale dx. et sin.* X-rays showed Harris' lines localised on *tibia dx. et sin.* proximally in pairs, at a distance of 13 mm from each other. Distally on *tibia dx.*, there were two lines at a distance of 15 mm from each other.

Fibula: Only a fragment of the left fibula was preserved.

SUMMARY

Sex: See Tables 2, 3. Sexual indexes of selected bones have clearly shown that these are remains of an individual of male sex.

- a) Sexuality index of the skull + 0.33 (m)
- b) Sexuality index of the pelvis + 0.74 (m)

Osseous age: degree of ossification of cranial sutures – evaluated according to Broca's equation and calculated:

- by Schmitt-Tamáška equation (1970) to be of cca 50–60 years,

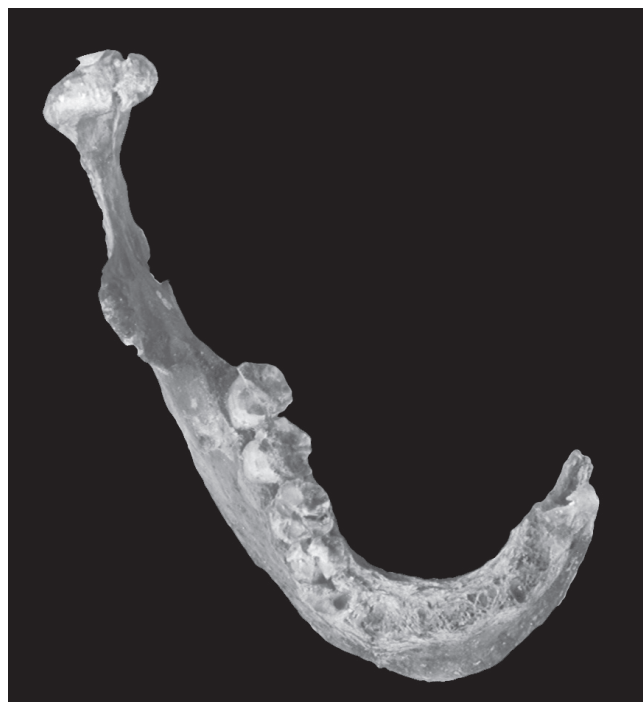


FIGURE 7. Mandible, occlusal view (Prokop of Luxemburg).

- enlargement of medullar cavities in humeri and femora in X-rays corresponded to age category V (i.e. 50–60 years – Szilvássy, Kritscher 1960),
- from the development of symphyseal faces of pubic bones and their changes, age can be estimated to be of 50–60 years according to Neméskery, Harsányi, Acsádi (1960).

Dental age: was evaluated to be of 62 ± 5 years according to Gustafson (1970) – Kilian method (1981), using modified equations according to Pilin – Šturman (1978).

Ossification of thyroid cartilage – considering the degree and type of ossification, the age was estimated at 55–60 years. Changes in bones and teeth indicate that the individual died between 50–60 years of age, most probably in the latter half of this interval. Degenerative-productive changes on bones indicate rather a higher age.

The length of long bones indicated that the studied individual was approximately 183 cm tall.

Skeleton of Margrave Prokop of Luxemburg (1375–1405)

State of preservation: The skeleton was not complete. The skull was strongly damaged, with the facial part missing (Figure 5). Also short bones of lower and upper extremities, the right scapula and some ribs were missing. The bones wore apparent traces of post mortal damage and deterioration due to the humidity of environment.

The skull: The only preserved parts of the skull were the incomplete braincase, incomplete maxilla (Figure 6) and mandible (Figure 7). All teeth manifested a higher degree

of physiological abrasion of enamel with bare dentine. For age assessment, a canine (C) from the maxilla was used.

The vertebrae showed post mortal damage. Small osteophytes developed on the vertebrae. Osteoporosis in the vertebral bodies reached degree II (Adler 1983). There were obvious Schmorl's nodes on X-rays of lumbar vertebrae. *Os sacrum* was preserved with the sacral canal open in the 3rd to 5th vertebrae.

Sternum: Only the sternal body – *corpus sterni* – was preserved, with small osteophytes. The value of the length-width index was of 34.8.

The ribs were incomplete and fragmentary. On the *corpus costae*, on articular faces of *caput costae*, and on *facies articularis tuberculi costae*, osteophytes were developed.

The left scapula was strongly post mortally damaged, showing a markedly porous surface and osteophytes.

Clavicles: Both clavicles were preserved; on their sternal ends (*Facies articularis sternalis*) there were obvious considerable arthrotic changes.

Humerus: Both humeri were markedly post mortally damaged. The X-ray of *humerus dx.* showed a visible retreat of medullar cavity in the proximal direction (reaching up to the *tuberculum majus*).

Radius: Both radii were completely preserved. Articular faces of distal epiphyses showed marked arthrotic changes.

Ulna: Both ulnae were complete, with arthrotic changes on articular faces of distal epiphyses.

Pelvic bones: *Ossa coxae* were completely preserved. They were rather higher and narrow, the *fossa iliaca* was high and narrow, the *crista iliaca* showed apparent S-forms, *sulcus praeauricularis* was missing, *angulus subpubicus* was of 79°, *arc composé* was formed by a simple line, *foramen obturatum* was of triangular shape, the *corpus ossis ischii* was very wide, the great pelvis was of medium size, and the small pelvis was narrow. *Acetabulum dx. et sin.* showed small degenerative changes. Enthesophytes and osteophytes developed on the *crista iliaca dx. et sin.* and on the *facies auricularis dx. et sin.*

Femur: Both femora were well preserved, with apparent post mortal surface abrasion and small osteophytes. X-rays show medullar cavity reaching over the *trochanter minor*; in the *collum femoris* and *trochanter major et minor*, there appear cavities in the spongiosis.

Tibia: The two tibiae were preserved, both with a slight platynemia. Bone accumulations appeared on proximal and distal epiphyses. Enthesophytes developed on the *tuberositas tibiae dx. et sin.*

Fibula: Both fibulae had missing proximal epiphyses.

SUMMARY

Sex: See *Tables 2–3*. Sexuality indexes of pelvic bones and the sacral bone clearly proved that the skeletal remains belonged to an individual of male sex.

Osseous age: changes of interior structure of two femoral heads and one humeral head corresponded to age

group V (50 years) according to Szilvássy, Kritscher (1990).

The age assessment based on the development of symphyseal faces of pubic bones and their changes is 50 years (Neméskery, Harsányi, Acsádi 1960).

Dental age: was evaluated to be of 54 ± 5 years according to Gustafson (1977) – Kilian method (1981), using modified equations according to Pilin – Šturmankin (1987).

Degenerative-productive changes on bones indicate rather a higher age. Changes in bones and teeth indicate that the individual died around 50 years of age.

The analysis of the skeletal find showed that the skeleton belonged to an individual of male sex, tall 183 ± 5 cm, who died around 50 years of age.

CONCLUSION

It is known from historical sources that John Henry, Margrave of Moravia, died in 1375; despite the fact that he built in Brno the Luxemburgs' royal tomb, he was not buried there. The burial place of John Henry, the father of Jost and Prokop, has so far been unknown. The third son John Soběslav was buried in Italy, but unfortunately, the remains were displaced from his tomb to an unknown place. Therefore, only the skeletal remains of brothers Jost and Prokop and their uncle Charles IV (Czech King and Roman Emperor, 1346–1378), are available for anthropological comparisons (*Tables 1–3*).

The most important pathological and genetic comparisons of the Luxemburg brothers' skeletal remains have already been published (Dočkalová *et al.* 2001). The present study has confirmed the presence of hereditary features that corresponded to the research results published by Vlček (1999).

It was mainly the conspicuous flattening of the front side of the maxilla at the place of *fossa canina*, the asymmetry in cervical vertebrae in the arrangement and size of venal apertures in the transversal protuberances (*foramina processus transversi*). Further, traces of incomplete ossification of vertebral spines in the sacrum and variances of disclosure of the spinal canal in the area of the third to fifth sacral vertebrae (*spina bifida*) were found. Vlček states in his study that "he had found these features also in the fifth Luxemburgs' generation." He determined that the features were dominantly hereditary in male individuals, and were not influenced by hereditary input of women married into the family. He had found common hereditary features in John of Luxemburg, his son Charles IV and daughter Elisabeth of Luxemburg (1323–1330); further in the sons of Charles IV (1316–1378) – Wenceslaus IV (1350–1419) and John of Žhořelec (1370–1396), and even in the Moravian Luxemburgs' branch, in Prokop of Luxemburg (1357–1405).

Our study has confirmed the features also in Jost of Luxemburg (1354–1411). In order to provide

comprehensive information, we present here also the anthropological characteristics of Jost and Prokop of Luxemburg, as well as data on their uncle Charles IV (Tables 1–3).

The skull of King Charles IV was short and narrow, the face was slim, orbits were high, the nose was narrow and high. The skeleton was medium robust, he was 173 cm tall, his blood group was AB-A, dental age 57.3 years (Vlček 1999). The skull of Prokop of Luxemburg was incomplete, short and low, the face was medium high (?), orbits were high, the nose was low. The skeleton was robust, he was 183 cm tall, his blood group was A, age around 50 years. The skull of Jost of Luxemburg was medium long and low, the face was medium high, orbits were high, the nose was medium wide. The skeleton was very robust, he was 183 cm tall, his blood group was A, age 55 years.

This brief anthropological characteristics of the members of the royal family is only an introduction to a prepared detailed study on the Moravian and Czech Luxemburghs.

REFERENCES

- ADLER C. P., 1983: *Knochen – Krankheiten*. Gustav Fischer Verlag. Stuttgart/New York 387 pp.
- BASS W. M. 1987: *Human Osteology: A Laboratory and Field Manual*. Columbia: Missouri Archeological Society.
- BUKOVSKÝ J., CEJNKOVÁ D., 1975: Středověké nálezy v obvodu bývalého kláštera v Králově Poli. *Památková péče* 35: 235–249.
- DOČKALOVÁ M., 1999: 650th anniversary of the Luxemburghs rule over Moravia, Czech Republic. Anthropological-medical research of Jost of Luxembourg. *Anthropologie* 3: 285–289.
- DOČKALOVÁ M., ELIÁŠOVÁ H., DVOŘÁK D., MAKOVEC P., 2001: Some of the major pathological and traumatic findings in the Moravian Luxemburghs (Prokop and Jost of Luxembourg). *Anthropologie* 1: 79–84.
- FEREMBACH D., SCHWIDETZKY I., STLOUKAL M., 1979: Empfehlungen für die Alters-und Geschlechtsdiagnose am Skellet. *Homo* 30, 1–32.
- GUSTAFSON G., 1977: Age determination on teeth. *J. Amer. Dent. Assoc.* 41: 45–54.
- KILIÁN J., ŠÍDLO R., MERGLOVÁ V., 1981: K problematice určování stáří jedince podle chrupu. *Soudní lékařství* 26, 3: 33–42, 4: 49–59.
- KNUSSMANN R., 1988: *Anthropologie*. Handbuch der vergleichenden Biologie des Menschen. Band I: Wesen und Methoden der Anthropologie. 1. Teil. Gustav Fischer Verlag, Stuttgart/ New York. 742 p.
- LOVEJOY C. O., 1985: Dental wear in the libben population: Its pattern and role in the determination of adult skeletal age at death. *Amer. J. of Phys. Anthropol.* 68, 1: 47–56.
- MARTIN-SALLER A., 1928: *Lehrbuch der Anthropologie*, Stuttgart, Gustav Fischer Verlag.
- NEMESKÉRI J., HARSÁNYI L., ACSÁDI G., 1960: Methoden zur Diagnose des Lebensalters von Skelettfunden. *Anthropologischer Anzeiger* 24: 70–95.
- NOVOTNÝ V., 1985: Sex determination of the pelvis bone: A systems approach. *Anthropologie* XXIX, 2–3: 197–206.
- NOVOTNÝ V., DELFINO P. V., POTENTE F., VACCA V., VANČATA V., 1996: Symmetry analysis of *incisura ischiadica major* in *Sexing the Human Pelvis*. *Anthropologie* 3: 253–263.
- OLIVIER G., 1969: *Practical Anthropology*. Springfield, Illinois: Charles C Thomas Publisher, 276 pp.
- PETTENER D., BRASILI G., P., CAVICCHI S., 1980: La determinazione del sesso mediante analisi multivariante di caratteri metrici della tibia. *Anthropol. Contemp.* 3: 363–372.
- PILIN A., 1982: Možnosti určení věku podle zubů. *Soudní lékařství* 27, 2: 1–10.
- PILINA., ŠTURMANKIN J., 1987: K odhadu věku neznámých mrtvol a kosterních nálezů podle výbrusu zubů. *Čs. kriminalistika* 20, 3: 225–233.
- SCHMITT H. P., TAMÁSKA L., 1970: Beiträge zur forensischen Osteologie. *Zeit. Rechtsmedecin* 67, 4: 230–248.
- STEELE D. G., 1976: The estimation of the sex on the basis of the talus and calcaneus. *Amer. J. of Phys. Anthropol.* 45: 581–588.
- SZILVÁSSY J., KRITSCHER H., 1960: Bestimmung des individuellen Lebensalters beim Menschen mit Hilfe der Spongiosastruktur der Langknochen. *Ann. Naturhist. Mus. Wien* 91/A: 145–154.
- UBELAKER D. H., 1978: *Human Skeletal Remains. Excavation, Analysis, Interpretation*. Chicago: Aldine Publishing Company. 116 p.
- VLČEK E., 1999: *Čeští králové I. Atlas kosterních pozůstatků českých králů přemyslovské a lucemburské dynastie s podrobným komentářem a historickými poznámkami*. Vesmír. Praha. 558 pp.
- VLČEK E., FLODOVÁ M., 1987: Markrabě Prokop Lucemburský. *Věda a život* 8: 569–572.

Marta Dočkalová
Anthropos Institute
Moravian Museum
Zelný trh 7
659 37 Brno, Czech Republic
E-mail: anthropologie@mzm.cz

Blanka Vacková
Department of Anthropology
Faculty of Science, Charles University
Viničná 7
128 44 Prague 2, Czech Republic
E-mail: vackova@natur.cuni.cz

Hana Eliášová
Daniel Dvořák
Police of the Czech Republic
Criminalistic Institute of Prague
P. O. Box 62/KÚP
Strojnická 27
170 89 Prague 7, Czech Republic
E-mail: hanaeliasova@atlas.cz
E-mail: dvorakd11@seznam.cz

