



Human Palaeontology and Prehistory (Palaeopathology)

Discovery of a mass grave of Napoleonic period in Lithuania (1812, Vilnius)

Michel Signoli ^a, Yann Ardagna ^a, Pascal Adalian ^a, William Devriendt ^a, Loïc Lalys ^a,
Catherine Rigeade ^a, Thierry Vette ^a, Albinas Kuncevicus ^b, Justina Poskiene ^b,
Arunas Barkus ^c, Zydrunė Palubeckaitė ^c, Antanas Garmus ^d, Virgilijus Pugaciauskas ^e,
Rimantas Jankauskas ^c, Olivier Dutour ^{a,*}

^a *Unité d'anthropologie, UMR 6578 CNRS, université de la Méditerranée, faculté de médecine de Marseille, 27, bd Jean-Moulin,
13385 Marseille cedex 5, France*

^b *Department of Archaeology, Faculty of History, Vilnius University, Lithuania*

^c *Department of Anatomy, Histology and Anthropology, Faculty of Medicine, Vilnius University, Lithuania,
(Vilniaus universiteto Medicinos fakulteto Anatomijos, histologijos ir antropologijos katedra), Ciurlionio 21, Vilnius LT2009, Lithuania*

^d *Institute of Forensic Medicine, Lithuanian University of Law, Lithuania*

^e *Institute of Lithuanian History, Lithuania*

Received 16 September 2003; accepted 12 February 2004

Available online 30 April 2004

Presented by Yves Coppens

Abstract

A mass grave was discovered in late autumn 2001 in Vilnius, during constructions works. Preliminary observations led to the conclusion that this mass grave contained part of the Great Army of Napoleon I, and had been created during the Retreat from Russia (December, 1812). In March 2002, an extensive excavation was carried out on a first part of the mass grave, in the framework of a Franco-Lithuanian collaboration, completed by a second excavation of another trench in September 2002. The laboratory study of all the skeletal material ended in October 2002. These preliminary results bring new additional data to the historical knowledge of this major event in the European history; this exceptional sample represents the biggest historical mass grave discovered until now. *To cite this article: M. Signoli et al., C. R. Palevol 3 (2004).*

© 2004 Académie des sciences. Published by Elsevier SAS. All rights reserved.

Résumé

Découverte d'un charnier de la Grande Armée en Lituanie (Vilnius, 1812). À l'automne 2001, un charnier a été découvert à Vilnius (Lituanie) dans le cadre d'aménagements urbains. Les premières observations de terrain ont permis d'associer ce charnier à la retraite de Russie de la Grande Armée (décembre 1812). En mars 2002, une fouille exhaustive du charnier a été entreprise dans le cadre d'une collaboration franco-lituanienne. Elle a été complétée par la fouille d'une seconde zone d'inhumation (septembre 2002) et par une étude en laboratoire de l'ensemble des ossements exhumés (achevée en octobre 2002). Ces premiers résultats confirment et complètent les données historiques relatives à cet événement historique majeur dans

* Corresponding author.

E-mail address: olivier.dutour@medecine.univ-mrs.fr (O. Dutour).

l'histoire de la construction européenne et apportent des informations anthropologiques originales sur cet exceptionnel échantillon paléodémographique, qui constitue le plus grand charnier des périodes historiques découvert jusqu'à présent. **Pour citer cet article : M. Signoli et al., C. R. Palevol 3 (2004).**

© 2004 Académie des sciences. Published by Elsevier SAS. All rights reserved.

Keywords: Biological anthropology; Mass grave; 'Grande Armée'; Retreat of Russia; Vilnius; Lithuania

Mots clés : Anthropologie biologique ; Charnier ; Grande Armée ; Retraite de Russie ; Vilnius ; Lituanie

1. Introduction

1.1. Discovery

The mass grave was discovered during construction works on the site of the former barracks of the Soviet Army, in the northern suburbs of Vilnius (Verkiu Street, Siaures Miestelis Territory) in late autumn 2001 (Fig. 1). At first, several alternative hypotheses were considered, connecting this mass grave to the successive military settlements of the area (i.e. Tsarist, Nazi and Stalinist periods); thus representatives from the Lithuanian Prosecutor General's office attended the site and started collecting evidence. Human bones

were submitted to the Institute of Forensic Medicine. However, some preliminary observations made on uniform remains (especially buttons showing the Imperial Eagle and numbers of regiments) led to the conclusion that this mass grave was one of the Great Army commanded by Napoleon I (Fig. 2). Historical research rapidly attributed this discovery to the retreat of the Great Army, which departing from Moscow, arrived in December 1812 in the city of Vilnius, where French troops were garrisoned. In 1806, the French Emperor decided to impose the Continental System on Russia. As Tsar Alexander I bypassed it, by establishing trade links with Great Britain, Napoleon organized the Russian Campaign, gathering the '20-Country Army'. Vilnius, as the capital of Lithuania, is considered, since



Fig. 1. Location of the mass grave, on high land in the northern part of Vilnius.

Fig. 1. Situation du charnier, en hauteur, au nord de la ville de Vilnius.



Fig. 2. General view of the site (photo: Y. Ardagna, UMR 6578).
Fig. 2. Vue générale du site (cliché : Y. Ardagna, UMR 6578).

June 1812, as a strategic point on the way to Moscow. About 400 000 soldiers crossed the Niemen on 24 June 1812, and 100 000 men arrived in Moscow on 14 September 1812. After the city was set on fire, on 15 September 1812, Napoleon ordered the retreat (19 October 1812). It was planned that the ‘Grande Armée’ would go to its Winter Quarters at Wilna (ancient name for Vilnius). After the crossing of Berezina (26–29 November 1812), about 70 000 men arrived in Wilna (3 December 1812). The extreme cold and the bad general conditions of the Army (starvation, exhaustion, typhus, low spirits...) forced the survivors (less than 40 000 soldiers) to cross back over the Niemen [11,19].

1.2. Excavations

The French Embassy was immediately informed of this discovery. The Lithuanian authorities decided that the mass grave would have to be excavated before the resumption of construction works, in the spring of 2002. The excavation started on 12 March 2002, under the direction of J. Poskiene from the Vilnius Department of Archaeology. Due to time constraint (i.e. the construction project), the work had to be completed over a short period. It ended exactly one month later.

The usefulness of associating French anthropologists to this excavation, in order to reinforce the anthro-

pological team on the field, seemed obvious to the Lithuanian anthropologists, headed by one of us (R.J.). Therefore, the team of the research unit in biological anthropology (UMR 6578, CNRS–‘Université de la Méditerranée’), which previously developed an experience in excavations of mass graves [9,16,18], was immediately informed about the discovery and the start of excavation. The French team (M.S., P.A., Y.A., W.D., L.L., O.D.) arrived on site on 22 March, and participated in the excavation until the end (10 April). The delay of arrival was due to the time needed to get financial support and to organize the trip. This field trip was officially sponsored by the CNRS and received help from the French Embassy.

2. Methods

The general objective was to perform the salvage excavation in a very short time, in order to provide the building contractor with a ‘skeleton-free’ area. The mass grave was located in a trench about 40 m long (39–42 m) and up to 10 m wide (6 m at the southwestern and 8 m at the northeastern end), starting 2 m below the recent ground level. This size along with the depth of the trench (1–1.5 m), semicircular in cross-section in its identified limits, and the obvious very high den-

sity of skeletons were, with the climatic conditions, the main difficulties that had to be faced. During spring excavations, the continuation of the trench at the southwestern end was discovered; the connection with this was destroyed during the construction work. This area (later named Area 3) was not covered during spring salvage excavations, as it was not in area of construction work.

It had been decided that the team of Lithuanian archaeologists and anthropologists would continue to excavate and gather individual skeletons, each of them being provided with an individual number. Bones of unidentifiable skeletons were classified, using an alphanumeric grid system on a square metre scale, as well as archaeological artefacts found in the two-thirds part (Area 2), from a face cutting opened at the southwest limit of the trench. The French anthropologists would develop, on the northeastern part of the trench (Area 1), a qualitative approach, using the methodology of funeral or forensic anthropology [7,20], previously applied on plague mass graves [17] and forensic cases [1] (Fig. 3). This approach, based on the observation of individual skeleton positions and stratigraphy of the trench, allows us to determine if the corpses were

buried simultaneously or in several steps, and to demonstrate the care used to bury them.

The grid coordinate system was installed, each square metre was labelled and beams placed on piles of tyres above the area, allowing a simultaneous excavation of all the burials and protecting them from a continuous stamping. Skeletons were individually excavated with specific small tools (scrapers, paintbrushes, dentistry instruments) in order to maintain each skeletal element and artefact in its original position. The use of an aspirator allowed us to remove sediment more quickly and easily. In this part of the excavation, due to time constraints, the work was performed seven days a week, whatever the climatic conditions. The data were recorded by digital camera, both for identified individuals and for each square of the grid coordinate system, in a zenithal view. In all cases, the orientation and the position of each identified skeleton were schematically drawn on a general map of the distribution, established day by day. Even if this took a long time, these techniques are the only ones allowing an in situ understanding of funeral practices and events (individual identification, process of decomposition of corpses, burial conditions, mode of filling of a pit, localization of artefacts).



Fig. 3. General view of the area N^o. 1 during excavation (photo: Y. Ardagna, UMR 6578).

Fig. 3. Vue générale de la zone n^o 1 en cours de fouille (cliché : Y. Ardagna, UMR 6578).

Due to methodological differences between the two teams, the preliminary results are slightly different in nature. The time constraint made the two techniques complementary, considering, on the one hand, that the anthropological observations performed on the one third of the pit could be extended to its entirety and, on the other hand, that the quantitative gathering allowed the rapid emptying of the bones and artefacts from the remainder of the pit. The part of the pit excavated in the spring season was ca. 400 m². Results obtained using anthropological methods applied to 100 m² of the pit were compared with the results from the rest of the excavation.

In September, Area 3 was examined by the Lithuanian part of the team. This consisted of the continuation of the same trench, going in a north–south direction. Excavation techniques for the Area 1 were used for this part. The length of the trench was 30 m, width –6 m; skeletons appeared at a depth of 2 m from the contemporary surface. The trench was semicircular in cross-section, its former depth ca. 1 m.

All skeletal material (both taken as individuals and from the grid) was cleaned and dried in the Department of Anatomy, Histology and Anthropology of the Faculty of Medicine (University of Vilnius) and informative pieces were registered and counted. In the laboratory, sex was determined using conventional techniques [4] in two ways: using conventional criteria of morphology of the pelvic bones (for all material – individual skeletons and bones taken in the grid) and morphology of the skull as complementary (individual skeletons only). Biological age at death was determined only for individual skeletons using conventional criteria (chronology of epiphysis fusion, age changes of pubic symphysis and cranial suture closure [4]).

3. Results

The close contact between the skeletons, illustrated by the very small quantity of deposit between bones (thickness of the deposit was only 0.2–0.5 m), attests that the corpses were all buried at the same time. The accumulation of bodies on the two sides of the pit showed that the trench was filled from its edges. The skeletons discovered in the middle of the trench correspond to corpses that had slipped or rolled over the others. It is highly probable that corpses were thrown



Fig. 4. The density of skeletons in the area 1 is about 7 corpses/m². The anatomical position of numerous skeletons suggests that the bodies were handled very little (photo: P. Adalian, UMR 6578).

Fig. 4. La densité des inhumations dans la zone 1 est d'environ 7 corps/m². La position des corps témoigne du peu de soin apporté à ces inhumations (cliché : P. Adalian, UMR 6578).

from the side of the edge of the trench by the people in charge of the burial. The anatomical position of numerous skeletons strongly suggests that the bodies were handled very little; moreover, some positions are very different from that of *rigor mortis*, suggesting that the intense cold had frozen victims in the position of their death, kept by the rapid burial of corpses (Figs. 4 and 5).

The number of individuals detected during the fieldwork in the Area 1 was 717; the density was about 7 corpses/m². The density seemed identical all along the trench; this allowed us on the field to estimate the number of corpses of 2000 to 3000 to have been simultaneously buried in this pit. A more precise numbering of the victims was performed in the Department of Anatomy, Histology and Anthropology of the Faculty of Medicine (University of Vilnius). Bones collected by prosecutors were pooled with this general number. The maximal number of definite skeletal elements was



Fig. 5. The position of some skeletons suggests that the intense cold had frozen victims in the position of their death, kept there by the rapid burial of corpses in December 1812 (photo: P. Adalian, UMR 6578).

Fig 5. La position de certains squelettes est évocatrice d'un décès survenant par froid intense, figeant les victimes en position au moment du décès, conservée par la rapide inhumation des corps en décembre 1812 (cliché P. Adalian, UMR 6578).

taken as the minimal number of individuals. It turned out that the number of left femoral diaphyses gave the highest number – 886 for the Area 1, 979 for Area 2, 1000 for Area 3 and 404 for non-attributed (collected during construction work and by prosecutors); thus the total minimal number of individuals, when all left femoral diaphyses were pooled, was 3269.

3.1. Sex determination

3.1.1. Area 1

Among the 717 individuals detected in the field from the Area 1, sex determination on the field indicated only 3 female skeletons. In the Area 1, the remains of 401 individuals were identifiable for further analysis. If only individuals are taken into consideration, 3 of them were identified as females, 5 probably females, 294 males, 3 probably males, and 96 of unde-

terminated sex. When bones from the grid were added, finally 8 individuals were determined as definitely females, 7 as probably females, 443 as definitely males and 28 as probably males; sexing of the rest of the material was impossible.

3.1.2. Area 2

For the Area 2, the remains of 146 individuals were identifiable for further analysis. If only individuals are taken into consideration, 2 of them were identified as females, 2 probably females, 140 males, and 2 probably males. When bones from the grid were added, 10 individuals were determined as definitely females, 12 as probably females, 610 as definitely males and 9 as probably males; sexing of the rest of material was impossible.

3.1.3. Area 3

In the Area 3, skeletons of 185 individuals were removed separately. Among them 3 were identified as females, 1 probably female, 155 males, 1 probably male and 25 individuals were of undetermined sex. Adding skeletal material taken in square meters, final result for Area 3 was no less than 17 females, 5 probably females, 695 males, 9 probably males.

From scattered and non-attributed bones, 2 females, 4 probably females, 135 males and 1 probably male were identified.

Thus, the final number of females in the site was 29 (probably females, 18), males 1883 (probably males, 22); sexing of the remains of 1317 individuals was impossible.

3.2. Age determination

Concerning the age, field observations did not reveal any children in this mass grave – even if some skeletons can be attributed to quite young individuals (less than 20 years old). The majority of them were in their twenties.

In the laboratory, from 15 females for whom age diagnosis was possible, 4 died at the age of 18–20, 2, around 20, 5, 20–25, 1, 25–30, 1, 30–35; age of 2 females was determined as adults (over 20 years). From 693 male individuals, more precise aging (in 5-year intervals) was possible for 430. Among them, 46 died at the age of 15–20 (the youngest one being ca. 15, incompletely fused parts of coxal bone), 211, 20–25,

115, 25–30, 39, 30–35, 10, 35–40, 5, 40–45, 3, ca. 50, 1, 50–60; for the remaining ones, age was determined by broader intervals or not determined.

4. Discussion

4.1. Archaeological records

The archaeological observations of the structure of these two perpendicular trenches confirmed former suggestions that this was V-shaped trench for French artillery battery, known as redoubts: historical evidence, indeed, states that two artillery batteries near the former road were stationed in this area, forming the second line of fortifications. This type of fortification corresponds to six statutory redoubts dug in July 1812, in the northern part of Wilna, following the orders of the ‘général de génie’ Chambarlhac [10].

The observations of the demographic structure of this sample, associated with the numerous artefacts (buttons, uniform remains) allowed us to confirm the military origin of the mass grave, and to invalidate another hypothesis such as, for example, a typhus epidemic killing many civilians of Vilnius. Numerous

subadults confirmed the historical data attesting that new recruits were enlisted in the Great Army.

Other data also demonstrated the context of crisis: (i) simultaneous burial of horses and men – in the excavated area, three horse skeletons were discovered in the bottom of the pit, in close contact with the human ones, and a smaller *Equidae*, which we identified as a mule –; (ii) burial of corpses wearing clothes was clearly revealed by the location of different uniform remains in the right position – buttons in the thoracic area; belt buckles in the lumbar area; fragments of gaiters in place on the tibiae; leather soles in contact with the foot bones; one soldier’s shako wearing a French tricolour leather cockade in the correct place on the skull (Fig. 6) –; (iii) lack of weapons revealing a disarmament or disorderly retreat.

The females were, from the year of 1805 formally recognised as ‘cantinières, blanchisseuses et vivandières’, an integral part of the army; they were accompanying the French Army in all campaigns, including the Russian campaign. Their functions were regulated (selling tobacco, alcohol and other goods, serving as cooks, washerwomen, medical assistants) and were sharing the difficulties of military life with



Fig. 6. Shako wearing the French cockade in the correct place on the skull. Picture taken at the moment of discovery (photo: P. Adalian, UMR 6578).

Fig. 6. Shako portant la cocarde française, en place sur le crâne. Le cliché a été pris au moment de la découverte (cliché : P. Adalian, UMR 6578).

regular soldiers. Many of them were extremely popular and respected in the army [14].

Detected unhealed traumas cannot be associated with combat wounds. Most often found were perimortal spiral and comminuted fractures of long bones (humeri were prevailing, 45 right, 39 left) from forceful bending, or from blows with blunt objects. Most probably such traumas occurred during crude handling of bodies around the time of their disposal. Only two cases of lesions on tibias made with cutting instruments (probably trying to remove shoes from frozen bodies during looting) were found.

4.2. Historical records

Analysis of buttons (performed by T.V., A.K., J.P., V.P.) allowed the identification in this trench, of the remains of soldiers' and officers' uniforms of ca. 40 regiments: 2, 4, 5, 6, 10, 12, 17, 18, 19, 21, 29, 35, 37, 44, 51, 53, 56, 61, 72, 84, 85, 92, 93, 105, 106, 108, 113, 115, 123; representing mostly linear infantry and cavalry regiments (Fig. 7). Other regiments of household cavalry, dragoon, foot artillery as well as Italian, Polish and Bavarian regiments of infantry were also identified. The presence of the Imperial Guard was also noted. However, no individual identification of soldiers can be made on the basis of the analysis of uniform remains. Detailed historical analysis of these remains is in progress.

5. Conclusion

In conclusion, these observations have permitted us to identify without any doubt this mass grave as the one of the retreat from Russia of the Great Army, in December 1812. This discovery, fits together with the historical records describing the burial of about 37 000 dead French soldiers in eight locations by the troops of Koutouzov into the defensive trenches made by the French garrison in Vilnius: *Inciderunt itaque in fossam quam sibi ipsi fecerunt* (they have been buried in the grave they dug). At the beginning of 19th century, this particular area was in the far outskirts (3 km from the downtown). The place for inhumation was well chosen – at the beginning of July 1812 French troops, with the help of local inhabitants, arranged a defence line on a small hill – a system of trenches and redoubts for artillery and infantry [10]. According to the reports of the Russian administration, corpses were buried in this particular location in two places, the total number of buried being 7190 soldiers and 112 horses. Localisation of the second place is very problematic, as the area now is completely urbanised. The place was ideal for burial because of a simple reason – the Russian administration was afraid of epidemics and was in a hurry to clean the city streets, squares and houses that were overflowed with corpses. The ready-made trench was relatively far from the city and, being near the road, easily accessible. Thus it seems that the burials took place here from the middle of December 1812.



Fig. 7. Part of a uniform of the 29th French linear infantry (photo: Y. Ardagna, UMR 6578).

Fig. 7. Pièce d'uniforme du 29^e régiment d'infanterie de ligne (cliché Y. Ardagna, UMR 6578).

Field observations correspond with the extremely cold winter (e.g., -28°C on 6 December, below -30°C during December nights) recorded in Vilnius at this time, suggesting that, more than typhus epidemics, historically well known as an important cause of death during the retreat from Russia according to the descriptions from soldiers [2,5,8,12,15], the cold was, with exhaustion and starvation the main cause of the death of so many people (for comparison, the Great Army combat losses in Russian campaign in total were 112 000 casualties; the Battle of Waterloo – 32 000 casualties). Soldiers during the retreat from Moscow – from 16 October until 8 December, when the largest number reached Vilnius, had to cover ca. 1000 km without rest, sufficient warm clothing, short of supplies and harassment by Cossacks [3,13]. However, analyses are planned to identify aDNA of the causative agent, as it has been previously shown for other infections [6]. This exceptional osteological sample has been studied in the laboratory before the official reburial (1 June 2003), as it represents a unique source of data from the beginning of the 19th century regarding the population of Europe. As we mentioned above, other mass graves corresponding to this event remained to be discovered in this area, now undergoing an important project of urbanization.

Acknowledgements

We thank the Ambassador and the staff of the French Embassy in Vilnius for the material support, help and warm hospitality, including Patrick Lion and Jean Deschanel for precious and friendly assistance in the field. The fieldtrips of the French team were supported in March, October 2002 and May 2003 by the CNRS and the ‘Université de la Méditerranée’.

References

- [1] P. Adalian, M. Signoli, L. Lalys, Y. Ardagna, M.-D. Piercecchi-Marti, O. Dutour, G. Léonetti, Intérêts de la présence d’une équipe spécialisée pour la levée de corps en anthropologie médico-légale, *Journal de Médecine Légale, Droit Médical, Victimologie, Dommage Corporel* 45 (7–8) (2002) 375–377.
- [2] G. Bertin, *La campagne de Russie de 1812*, Flammarion, Paris, 1895.
- [3] A. Bourgoigne, *Mémoires du sergent Bourgoigne*, Hachette, Paris, 1978.
- [4] J.E. Buikstra, D.H. Ubelaker, Standards for data collection from human skeletal remains, *Arkansas Archeological Survey Research Series* (n° 44) (1994).
- [5] J.-B. Coignet, *Les cahiers du capitaine Coignet*, Hachette, Paris, 1885.
- [6] M. Drancourt, G. Aboudharam, M. Signoli, O. Dutour, D. Raoult, Detection of 400-year-old *Yersinia pestis* DNA in human dental pulp: an approach to the diagnosis of ancient septicemia, *Proc. Natl Acad. Sci. USA* 95 (1998) 12637–12640.
- [7] H. Duday, P. Courtaud, E. Crubézy, P. Sellier, A.-M. Tillier, L’anthropologie « de terrain » : reconnaissance et interprétation des gestes funéraires, *Bull. Mém. Soc. Anthropol. Paris* 2 (1990) 29–49.
- [8] L.-F. Lejeune, *Mémoires du général Lejeune*, Firmin-Didot, Paris, 1895.
- [9] G. Léonetti, M. Signoli, A.-L. Pelissier, P. Champsaur, I. Herzhovitz, C. Brunet, O. Dutour, Evidence of pins implantation as a means of verifying death during the Great Plague of Marseilles (1722), *J. Forensic Sci.* 42 (1997) 742–746.
- [10] Lettre n° 18949 de l’empereur Napoléon I^{er}, du 12 juillet 1812, *Archives du Service historique de l’Armée*, Paris, France.
- [11] L. Madelin, *Histoire du Consulat et de l’Empire*, Hachette, Paris, 1949.
- [12] M. Marbot, *Mémoires du général baron de Marbot*, Plon, Paris, 1891.
- [13] J.-M. Putigny, *Mémoires du grognard Putigny, baron d’Empire*, Copernic, Paris, 1980.
- [14] L. Ries, Les cantinières, Uniformes, *Les Armées de l’Histoire* 67 (1982) 53–69.
- [15] P. de Ségur, *La campagne de Russie*, Firmin-Didot, Paris, 1894.
- [16] M. Signoli, J. Da Silva, E. Georgeon, G. Léonetti, O. Dutour, Vérification de la mort durant la Grande Peste de Marseille : données anthropologiques issues de la fouille du charnier de l’Observance (Marseille), *C. R. Acad. Sci. Paris, Ser. IIA* 322 (1996) 333–339.
- [17] M. Signoli, G. Léonetti, P. Champsaur, C. Brunet, O. Dutour, Mise en évidence d’une autopsie crânienne réalisée pendant la Grande Peste de Marseille (1720–1722), *C. R. Acad. Sci. Paris, Ser. IIA* 320 (1997) 575–580.
- [18] M. Signoli, I. Ségué, J.-N. Biraben, O. Dutour, Paleodemography and historical demography in the context of an epidemic : plague in Provence in the 18th century, *Population* 57 (6) (2002) 829–854.
- [19] J. Tranié, J.-C. Carmigniani, *La campagne de Russie*, Pygmalion, Paris, 1997.
- [20] D.H. Ubelaker, *Human Skeletal Remains: excavation, Analysis, Interpretation*, Taraxacum, Washington, 1989.