«Numerous and tall»: a revision of the Late Neolithic human remains found in a collective burial site at Sclaigneaux (Prov. Namur), Belgium

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Summary

The aim of this research was to study the human remains excavated in 1872 from a cave located in Sclaigneaux (Prov. Namur). The 14C-dating of a human tibia gives 4155 ± 35 BP and makes the collective burial going back to the Late Neolithic period. The minimum number of individuals is 58 (45 adults and 13 children). Both the children and the adults were buried in the cave, whatever their gender and their age. Compared to other Neolithic samples from the Meuse Basin, Sclaigneaux individuals were amongst the tallest. They also displayed a good state of health.

Keywords: Neolithic, anthropology, collective grave in cave, Meuse basin, Belgium.

Résumé


Mots-clés : Néolithique, anthropologie, tombe collective en grotte, bassin mosan, Belgique.

Samenvatting

Het doel van dit onderzoek was het bestuderen van de menselijke resten die in 1872 in een grot te Sclaigneaux (Prov. Namen) ontdekt zijn. 14C-datering van een menselijke tibia levert 4155 ± 35 BP op en brengt het collectief graf terug tot het Late Neolithicum. Het minimum aantal individuen bedraagt 58 (45 volwassenen en 13 kinderen). Zowel de kinderen als de volwassenen werden ongeacht hun geslacht en leeftijd in de grot begraven. In vergelijking met andere Neolithische stalen afkomstig uit het Maasbekken waren de individuen van Sclaigneaux van de grootsten. Bovendien vertoonden zij een goede gezondheid.

Trefwoorden: Neolithicum, antropologie, collectief graf in grot, Maasbekken, België.

The cave that is the object of this study is located 200 m SW from the station of Sclaigneaux (50°29’30”N, 5°01’20”E), less than 1 km away from Sclayn (fig. 1). It is of karstic origin. According to Arnould (1873), its volume was c. 13 m³ and it had two entrances, opening onto the left bank of the river Meuse, about 6.70 m above the water level. For a further description of the cave, please refer to the mentioned publication.

In 1872, a team directed by the amateur archaeologist, M. G. Arnould, excavated the cave and its collective burial. The human and animal remains and the archaeological artifacts were briefly described by Arnould in 1873. The human remains including sixteen more or less complete skulls were the subject of a publication by Houzé (1903). This author estimated that about 50 individuals were buried in the cave. He made a detailed description of the skulls and provided tables with their measurements. He gave stature estimation averages for 10 males and 3 females (tab. 1). He also mentioned some pathological cases.

The collection belongs to the Archaeological Museum of Namur and is stored at the Royal Belgian Institute of Natural Sciences, where the thought of a more detailed analysis originated.

No stratigraphic divisions could be made, as the bone material was found upon the cave floor, already mixed itself and with general litter (the cave having been accessible to the public). Nowadays the entrances are obstructed by the dwellings of adjoining occupants. Thus a renewed study of the cave is for the moment
impossible. Furthermore, we surmise that over the years it has already been completely emptied out. 

$^{14}$C-dating of a human tibia fragment (GrA-32975) brought it back to 4155 ± 35 BP, becoming 2880-2620 BC after calibration with OxCal program. This corresponds to the start of the Late Neolithic Period (Seine-Oise-Marne civilization) which coincides with the dates for the majority of other known collective graves in the Belgian Meuse basin (Cauwe, 1989; Toussaint et al., 2001). The contemporary cultural content of the cave exists solely in the form of an arrowhead and a few flint stones. More recent objects include six potsherds (believed to be mediaeval; A. Hauzeur, pers. com.) and an iron horseshoe.

Besides human remains, the bone assemblage also includes a large amount of - also mostly fragmented - animal bones, comprising diverse groups of mammals, fish, frogs and birds (Arnould, 1873). Most animals either match the typical (late-) intrusive pattern or denote human consumption. A new study is certainly useful, since this material has not been re-examined since the 19th century.

The total number of human bone fragments that were found, and hence included in our research, exceed 6,000, along with 1,144 teeth (462 still in the jaws).

The minimum number of individuals (MNI) subdivides into 45 adults, based on the amount of axis vertebrae (fig. 2a) and into 13 children, based on the number of clavicles and of non-matching skull fragments (fig. 2b). With a total of 58 individuals, Sclaigneaux is characterised by an unusually high MNI. There are only two other known Belgian Neolithic graves which contain an almost similar amount: La Cave in Maurenne (with 56 individuals; Vanderveken, 1997) and Bois-Madame in Burnot (57 individuals; Dumburch, 2003). Due to severe fragmentation, no pelvic bones could be used for the gender determination. The long bones were sexed via the methods described in Krogman & Iscan (1986), the mandibles and the skulls through the qualitative method of Ferembach et al. (1979). We also applied the mathematical method of de Paiva and Segre (2003) for the mastoid process. This latter method was recently tested and improved by Polet et al. (2005). The juvenile mandibles were sexed using the method of Schutkowski (1993). Four out of five bone types (femurs – N = 12, humeri – N = 7, mandibles – N = 13 and skulls – N = 10) indicate that there were more male than female adults. Only the tibia (N = 29) seemed more female, for 79.3 %. We were able to determine the sex of twelve of the thirteen children: 58.4 % of them turned out to be female. The sex ratio of the children is thus relatively even. We can also conclude that both the
children and the adults of the Sclaigneaux sample were buried in the cave, whatever their gender.

To quantify the stature, of our sample, we needed to reconstruct the original length of the long bones, since most of them were fragmentary. To estimate the long bones length, we used the regression formulae of Polet et al. (1991) and Steele (1970). The equations of Formicola & Franceschi (1996) developed for European Neolithic individuals helped us to calculate the body heights. Also, Byers et al. (1989) provided us with a direct relation between the length of metatarsals I and the stature.

The average height for males estimated from the femur is 168.8 cm (N = 5), 170.0 cm for the tibia (N = 2) and 167.1 cm for the humerus (N = 5). The averages for women are analogously 160.3 cm for the femur (N = 2) and 162.3 cm for the tibia (N = 7). Our estimations are higher than those calculated by Houzé (1903). However, Houzé’s averages were not reliable because they were calculated on the basis of estimations made from different types of bone (an individual could therefore have been included several times in the average calculation).

A comparison with published results of other Belgian Neolithic sites clearly shows that our Sclaigneaux stature estimations are the tallest, approaching the average heights of the extant European inhabitants (tab. 1). To avoid the bias linked to the method selected for stature estimation (tab. 1), we also compared raw data, i.e. long bone lengths. We chose the metatarsals I because they are plentiful and often intact. In comparison with 86 other Neolithic individuals from the Meuse Basin, the individuals from Sclaigneaux are indeed amongst the tallest (fig. 3).

<table>
<thead>
<tr>
<th>Average stature (in m)</th>
<th>Men</th>
<th>Women</th>
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Tab. 1 – Averages of measured and estimated statures from extant and Neolithic populations.
The 13 children range from 36 weeks in utero (based on tibia length) till 15-20 years (based on dental eruption). Finally, we studied two non-specific stress indicators indicating good or bad life conditions during growth (Goodman & Rose, 1990; Stuart-Macadam, 1992): *cribra orbitalia* (lesions of the roof of the orbit which has been associated with anaemia) and enamel hypoplasia (defect resulting from incomplete formation of the enamel matrix mainly due to illness and/or malnutrition during tooth formation). No *cribra orbitalia* were found. Only two occurrences of enamel hypoplasia were found.

Age estimation was performed through the analysis of the state of closure of the cranial sutures (Meindl & Lovejoy, 1985) and by means of the modifications of the pubic symphysis (Brooks & Suchey, 1990). Only 8 adult skulls and 3 pubic symphyses could be studied. The skulls belong to 2 young adults, 1 young-middle-aged adult, 2 middle-aged adults and 3 old adults. The 3 symphyses can be attributed to 2 young and 1 middle-aged adults.

The age of the children was estimated on the basis of dental calcification and eruption stages (Ubelaker, 1989) and long bones dimensions (Alduc-Le Bagousse, 1988; Scheuer & Black, 2000). The 13 children range from 36 weeks in utero (based on tibia length) till 15-20 years (based on dental eruption).

Finally, we studied two non-specific stress indicators indicating good or bad life conditions during growth (Goodman & Rose, 1990; Stuart-Macadam, 1992): *cribra orbitalia* (lesions of the roof of the orbit which has been associated with anaemia) and enamel hypoplasia (defect resulting from incomplete formation of the enamel matrix mainly due to illness and/or malnutrition during tooth formation). No *cribra orbitalia* were found. Only two occurrences of enamel hypoplasia

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**Fig. 2** – Minimum number of individuals (MNI) following bone types for the adults (A) and the children (B) of Sclaigneaux.
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were identified on 916 permanent teeth (0.22%). These low levels of stress markers show that the Sclaigneaux population was in good condition during its life.

The lack of information about the context of the findings unfortunately avoid us to study such themes as the distribution of the individuals throughout the cave, or whether they might have undergone any ritual treatments (specifically those not leaving evidence on bones).

Nevertheless, we showed that the Neolithic individuals buried in Sclaigneaux cave were numerous, in good state of health and tall.

Fig. 3 – Length of metatarsal I sorted in ascending order for 86 Neolithic individuals from the Meuse Basin and 33 individuals from Sclaigneaux (left metatarsal I).

Bibliography


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