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# HARRIS'S LINES AND CRIBRA ORBITALIA AS INDICATORS OF STRESS IN PREHISTORIC HUMAN POPULATIONS

*ABSTRACT — Harris's lines on femur and tibia were examined simultaneously with the pathological changes on orbita on 98 individuals (from 0 to 17 years) from medieval burial ground Cedynia. Harris's lines have been observed in 68 % of the population but there is no correlation between the increase of Harris's lines and subsequent cribra orbitalia. This conclusion is explained on the basis of a different nature of both processes.*

*KEY WORDS: Medieval populations — Skeleton — Ontogeny — Stress — Harris's lines — Cribra orbitalia.*

In investigations of relations between man and the environment in prehistory research methods are used extensively which make it possible to evaluate influence of various stresses on the morphological development of an individual, particularly in early stages of ontogenesis.

One of these methods is a radiological evaluation of long bones (femur and tibia) for the presence of Harris's lines (Kühl 1980) and also pathological changes in an upper part of eye orbit (hyperostosis spongiosa tecti orbitae) which Hengen 1971 called cribra orbitalia.

The aim of the work was to find correlation between these pathologies, recognizing them as an indicator of developmental phenomena, particularly in children.

The author investigated a population of children from a medieval burial ground at Cedynia. The sample contained 98 individuals in the age from 0 to 17 years. The number of Harris's lines was analysed in long bones, structural differences as for thickness and the so called Hl pattern, thus the recurrence of lines and also the presence of cribra orbitalia on the skull according to Hengen scale (1971).

The participation of children with Harris's lines in the investigated populations was 68 percent of the total number of individuals (*Fig. 1*). It was confirmed for the general tendency described by Asada (1965), Wells (1963, 1969) and Kühl (1980) as for the line sequence in particular bones.

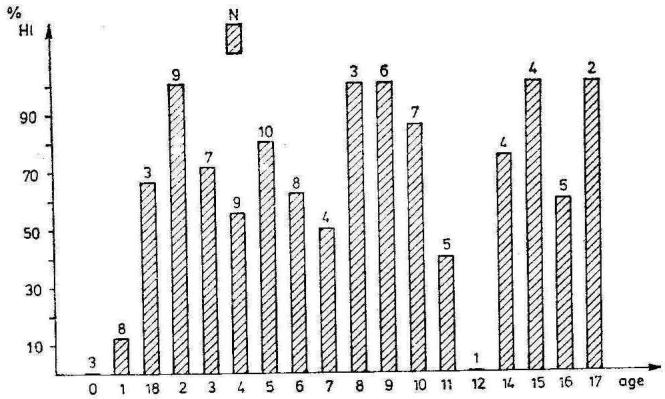


FIGURE 1.

The author also investigated the distribution according to the age of individuals with the greatest number of lines in kneejoint and also in tibia (*Fig. 2*).

A regularity of the increase of the degree of perforation of the orbital ceiling along with age for the all studied individuals (*Fig. 3*).

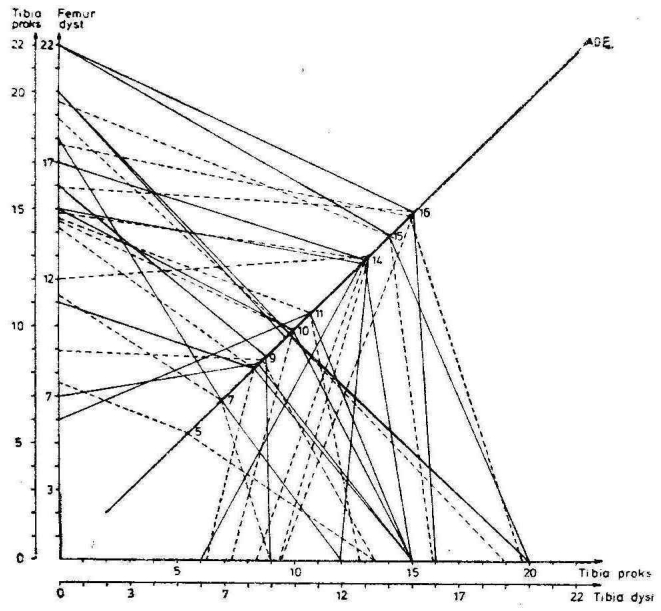


FIGURE 2.

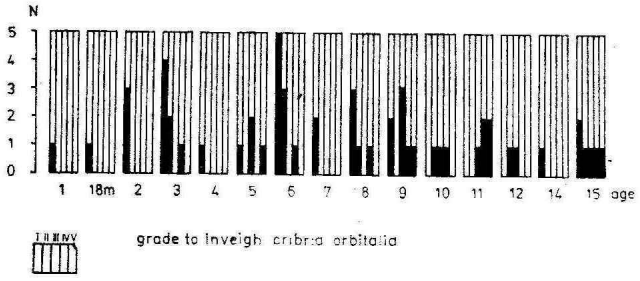


FIGURE 3.

Meanwhile the lack of correlations between the subsequence of cribra orbitalia and the increase of Harris's lines was found. The lack of this correlation is understandable if we consider cribra orbitalia as environmental indicators, and as the cause the deficiency of iron, and of some microelements (Mg, Zu, Cl) (Brothwell 1981). On the other hand, Harris's lines generalize responses to nonspecific stress (Buikstra 1976).

The above remarks justify further investigations on the search of other indicators describing morphological state of the population. This will probably make possible to recognize better the character of factors causing Harris's lines.

## REFERENCES


BUIKSTRA J. E., 1976: The caribou Eskimo: General and specific Disease. *American Journal of Physical Anthropology* 45: 351—368,

BROTHWELL D. R., 1981: *Digging up bones. The excavation, treatment and study of human skeletal remains.* 2nd rev. Oxford University Press, 165 pp.,

HENGEN O. P., 1971: Cribra orbitalia: pathogenesis and probable etiology. *Homo* 22; 57—76,

KÜHL I., 1980: Harris's lines and their occurence also in bones of prehistoric cremations. *Ossa* 7; 129—171,

WELLS C., 1963: The radiological examination of human remains. *Science in Archaeology* Chapt. 39, ed. D. Brothwell and E. S. Higgs, 401—412,

WELLS C., 1969: A new approach to paleopathology; Harris's Lines. In: D. Brothwell and A. T. Sandison (Eds.): *Diseases in Antiquity;* 390—404 pp. C. Thomas Publisher, Springfield, Illinois.



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