

OBSERVED CASES OF OS MALARE BIPARTITUM IN HUNGARIAN PALEOANTHROPOLOGICAL FINDS

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Abstract

Os malare bipartitum was found to occur in 10 cases among 1860 palaeoanthropological finds dating from the Middle European Copper Age to the Hungarian Middle Age, and primarily from the first millenium A. D. Three of these cases were of a Mongoloid nature. It appears obvious that a congenital anomaly is involved; there are no sexual differences in its occurrence, but it was observed more frequently on both sides of the splanchnocranium simultaneously. The frequency of 0.54% seems low compared to the literature data, but at the same time supports observations as to the extreme rareness of this anomaly.

In the study of palaeoanthropological material, besides the establishment of the metrical characteristics the observation of the non-metrical (morphological) variations (anatomical variations, pathological symptoms) too is becoming increasingly more important, since these permit the ascertainment of differences between individual populations (BROTHWELL, 1959). The observation of ten characteristics is proposed in the literature (BROTHWELL, 1963). *Os malare bipartitum* too can be regarded as such a characteristic.

This congenital anomaly can be observed on the cheek bone (*os malare*), and arises through its bipartition by a suture. According to Virchow, two types can be distinguished:

1. division into an upper and a lower part by a transverse suture, and
2. division into an anterior and a posterior part by a vertical suture (FEHÉR, 1937).

Its formation has been explained by the occurrence of several ossification centres, though the presence of these has not yet been confirmed (MARTIN and SALLER, 1959). The phenomenon was first described by SANDIFORT in 1779 (FEHÉR, 1937), and has been mentioned since by a number of authors. It was termed by HILGENDORF and DÖNITZ *os japonicum*, by VIRCHOW *os malare bipartitum* (RANKE, 1881), by GRUBER *os zygomaticum bipartitum* (GRUBER, 1873a), and by BÄLZ *os ainoicum* (MARTIN and SALLER, 1959). The nomenclature *os malare bipartitum* was first used by MATIEGKA (1899).

In addition to the bipartite cheek bone, *os malare tripartitum* too can occur very rarely. This was first described by SPIX (1815), and later reported by other authors as well. Thus, GRUBER, RICCARDI, RUGGERI and CALORI describe its occurrence in human, and FLESCH and HRDLIČKA in orang-utan skulls (GRUBER, 1873b; CALORI, 1893).

It emerges from the literature references that the phenomenon of the bipartite cheek bone has been known for more than 150 years, and it is not surprising, there-

fore, that many populations have since been subjected to study with regard to the observation of its occurrence. Virchow found one such anomaly in 800 Bavarian skulls (RANKE, 1881), and HILGENDORF two cases from among 11 Japanese skulls, while DÖNITZ described it in Aino skulls (MATIEGKA, 1899). ELLIOT—SMITH and WOOD—JONES (1910) found seven cases in a large Egyptian series. MATIEGKA (1899) recognized it in one male skull, and gives the detailed literature of this anomaly.

In European populations it occurs with a frequency of 0.15—10.25% (FEHÉR, 1937).

The investigations of NAKANO, KOGANEI, HASEBE, ADACHI and TOLDT indicate that its frequency of occurrence in Japanese skulls is 3.5% (FEHÉR, 1937).

It has been examined in Aino skulls by BARTELS, BÄLZ, DÖNITZ, VIRCHOW, KOPERNITZKY, KOGANEI, LE DOUBLE, TARENECZKY, HABERER and TÖRÖK (FEHÉR, 1937; MATIEGKA, 1899).

Os malare bipartitum has also been found in a smaller material among Chinese, Koreans and extinct Peruvians, while only two cases have so far been described among Negroids (MARTIN and SALLER, 1959).

HRDLIČKA and RUSSEL found a frequency of only 0.06% in North-American Indians.

At any event, the presumed greater frequency in the Mongoloid races induced research workers to describe bipartite cheek bone as os japonicum (HILGENDORF and DÖNITZ) and os ainoicum (BÄLZ). In this way it was wished to indicate that this anomaly should be treated as a characteristic of humans belonging to the Mongoloid races. At the same time, MARTIN and SALLER (1959) point out that this suture anomaly occurs too rarely among the Mongolids main-races for it to be treated as specific for them. This also appears to be supported by the fact that the frequency found in Japanese skulls has a range 0—5.08%, whereas in certain cases among Europeans it can even attain 10%.

Hungarian material has been examined by LUSCHAN, MÉHELY and FEHÉR; the former two authors found it to be more frequent, and the latter a frequency of 0.15% (FEHÉR, 1937).

Materials and Methods

The Department of Anthropology in A. J. University, Szeged possesses several thousand authenticated palaeoanthropological finds; in addition to the customary anthropological evaluation, therefore, it was also possible to pay attention to this anomaly.

The finds were examined by the technique of MARTIN and SALLER to establish the following measurements: greatest length of the skull, the greatest width of the skull, the basion-bregma height, the width of the malar arch, the height of the upper face, the length and width of the palate, and the height and width of the orbit. The dimensions of the os malare and the sutural bone separated by the transverse suture were also established in the following way:

Greatest height of the os malare: the straight-line distance of the highest point of the zygomaticofrontal suture from the lowest point of the zygomaticomaxillary suture.

Upper width of the os malare: the straight-line distance between the highest points of the zygomaticomaxillary and zygomaticotemporal sutures.

Lower width of the os malare: the straight-line distance between the lowest points of the zygomaticomaxillary and zygomaticotemporal sutures.

Greatest length of sutural bone: where found.

Greatest height of sutural bone: where found.

The taxonomic determination is reported on the basis of the method of LIPTÁK (1972).

Finally, the dimensions, the most important indices and the results of the taxonomic determination are tabulated.

The more detailed description of the observed cases is as follows:

Most important measurements of skulls with os malare bipartitum

Measurements and indices	Skull inventory numbers, according to sex									
	Males					Females				Child
	1920.	981.	52.382.1.	257.	4076.	1717.	1804.	864.	861.	1175.
Glabello-occipital length	191	180	188	177	173	—	167	176	180	161
Maximum breadth of skull	152	161	139	146	148	143	134	143	130	—
Basion-bregma height	126	129	131	137	138	117	122	127	—	—
Cranial index	79,6	89,4	73,9	82,5	85,6	—	80,2	81,3	72,2	—
Breadth-height index	82,9	80,1	94,2	93,8	93,2	81,8	91,0	88,8	—	—
Bizygomatic breadth	145	142	126	133	130	121	126	120	—	—
Upper facial height	80	70	63	76	67	70	70	64	69	50
Upper facial index	55,2	49,3	50,0	57,1	51,5	57,9	55,6	49,2	—	—
Orbital breadth	40	37	39	37	36	43	39	41	39	34
Orbital height	37	32	30	30	32	39	36	33	30	30
Orbital index	92,5	86,5	76,9	81,1	88,9	90,7	92,3	80,5	76,9	88,2
Palatal length	49	45	46	55	46	50	40	49	46	—
Palatal breadth	40	44	41	40	39	41	40	40	36	—
Palatal index	81,6	97,8	89,1	72,7	84,8	82,0	100,0	81,6	78,3	—
Height of os malare (right)	61	—	45	—	48	47	52	50	—	—
Height of os malare (left)	54	—	45	—	47	47	50	47	—	35
Upper breadth of os malare (right)	50	—	—	—	—	43	—	46	—	—
Upper breadth of os malare (left)	50	—	38	—	42	—	37	44	—	34
Lower breadth of os malare (right)	27	—	—	—	—	38	—	26	—	—
Lower breadth of os malare (left)	32	—	18	—	30	32	17	27	—	18
Height of sutural bone (right)	12	—	—	—	—	9	10	9	—	—
Height of sutural bone (left)	—	—	9	—	7	—	7	—	—	7
Length of sutural bone (right)	32	—	—	—	—	36	—	29	—	—
Length of sutural bone (left)	30	—	18	—	31	—	15	—	—	21

Result of taxonomic determination b p—sa crA—am t crB — p—x crB—x n —
 Explanation of symbols: b=Bajkal, p=Pamirian, sa=Sajanic, crA=Cromagnoid-A, am=Atlantomediterranean, t=Turanid, crB=Cromagnoid-B, n=Nordic, x=unknown.

1. Skull no. 1920. Site of find: unknown. Archaeological age unknown, but because of the mongolid features (Fig. 1, 1—2) probably Avar Period. A male of mature age. Bilateral os malare bipartitum, where the transverse suture is obliterated in both cases (Fig. 1, 3). Palatine, maxillary and mandibular tori (Fig. 1, 4—5) are to be found on the skull, with two os epiptericum on the left side. From a taxonomic viewpoint it can be identified with the Bajkal race.

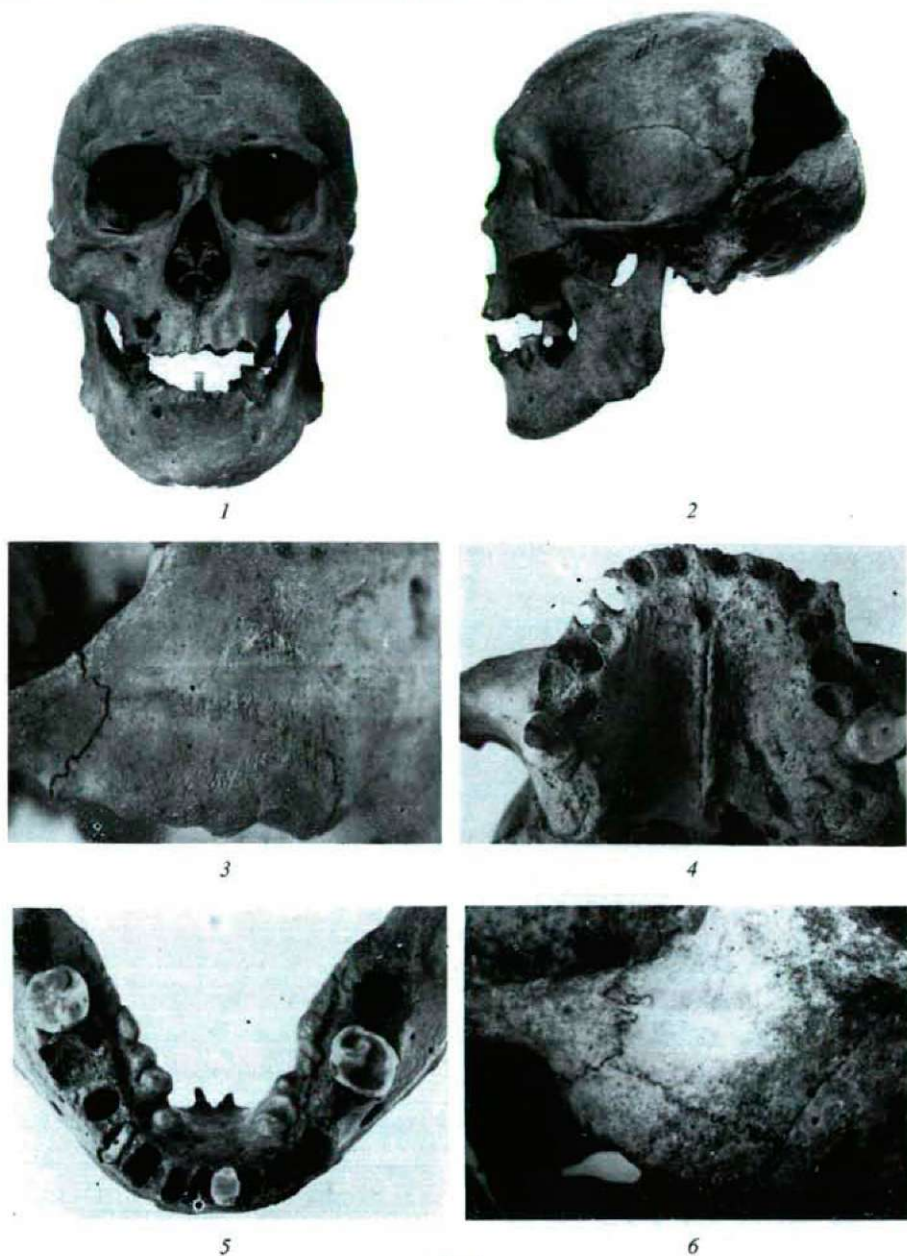


Fig. 1

2. Skull no. 981. Site of find: Adorján-Vata farm (Yugoslavia), grave no. 30, Avar Period. The find is in the collection of the Vojvodanski Muzej, Novi Sad, and was reported earlier (BARTUCZ and FARKAS, 1957). A male of mature age. Bilateral os malare bipartitum can be found on the skull (Fig. 1, 6 and 2, 1). From a taxonomic viewpoint it is a mixed variant of the Pamirian and Tungid (low-faced Mongoloid) races, i.e. Europeomongoloid.

3. Skull no. 52.382.1. Site of find: Orosháza-Rákóczi site, grave no. 232, Arpadian age. A male of adult age. Os malare bipartitum on the left side (Fig. 2, 2), with Worm-type bones in the lamboid suture. A mixed variant of the Cromagnoid-A and Atlantomediterranean races (LIPTÁK and FARKAS, 1962).

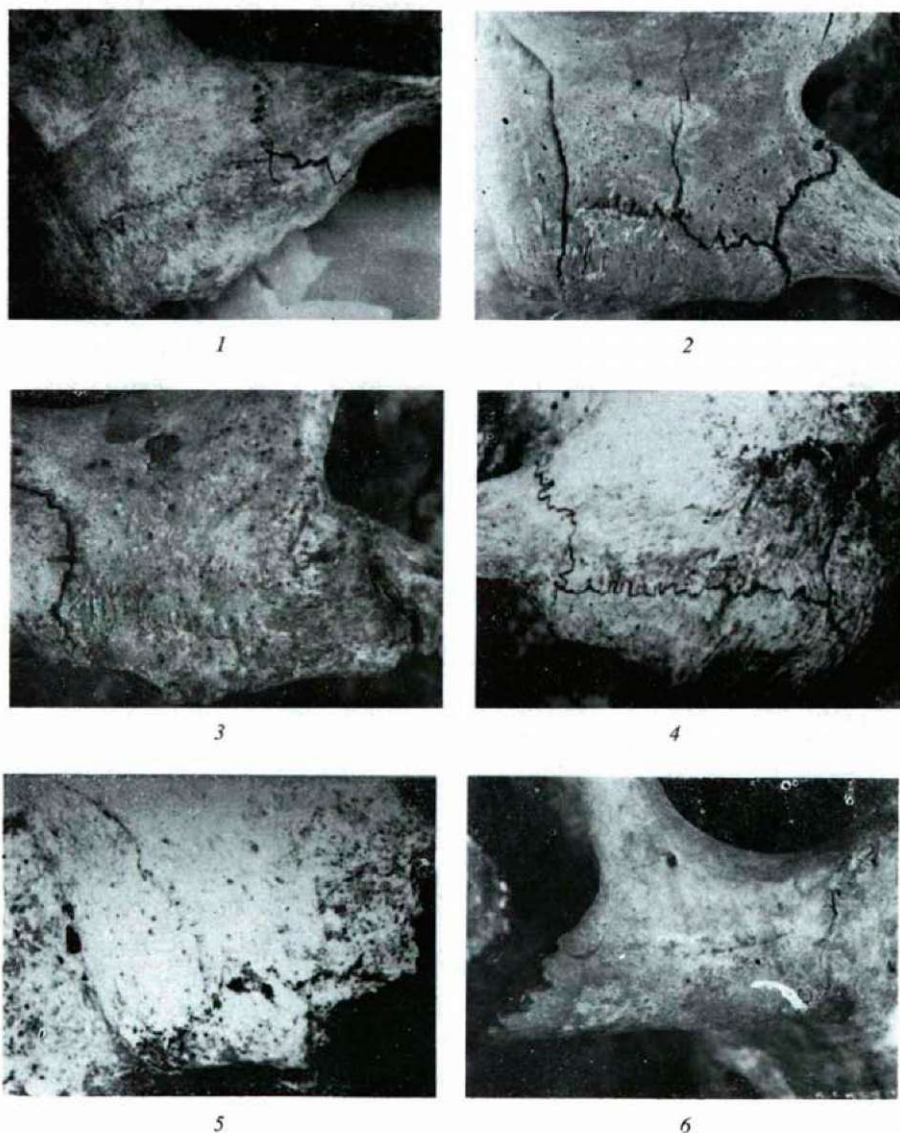


Fig. 2

4. Skull no. 257. Site of find: Zombor—Bükkszállás (Yugoslavia), grave no. 61, 15th—17th century. The find is in the collection of the Vojvodanski Muzej, Novi Sad. A male of mature age. Os malare bipartitum can be found on both sides, but that on the left side is extensively damaged (Fig. 2, 4—5). A metopic suture can be observed on the os frontale. According to BARTUCZ (1960), the find exhibits Turanoid features, i.e. it is Europeomongoloid.

5. Skull no. 4076. Site of find: Vedresháza, grave no. 64, Avar Period. A male of mature age. Ossified os malare bipartitum on the left side (Fig. 2, 3). Os epiptericum and a Worm-type bone can be found on the skull. It exhibits features of the Cromagnoid-B taxon.

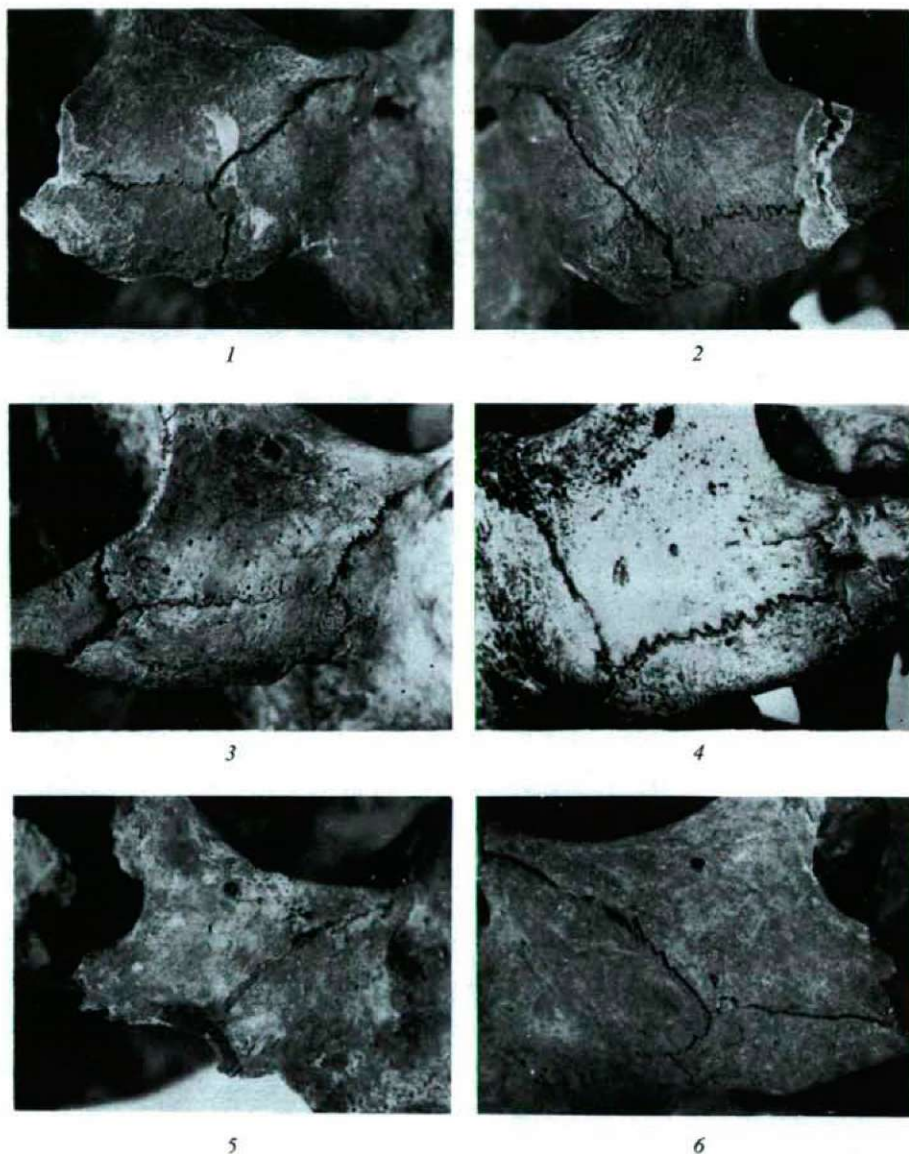


Fig. 3

6. Skull no. 1717. Site of find: Szeged-Fehértó "A" burial-ground, grave no. 61, Avar Period. A female of mature age. Ossified transverse suture on the right side (Fig. 2, 6), and os epiptericum on the right side. From a taxonomic viewpoint the find can not be evaluated (LIPTÁK and VÁMOS, 1969), but it can be stated that it is of a Europid character.

7. Skull no. 1804. Site of find: Szeged-Fehértó "A" burial-ground, grave no. 214, Avar Period. A female of mature age. Bilateral os malare bipartitum (Fig. 3, 1—2), with Worm-type bones in the lambdoid suture. The find primarily exhibit the features of the group of characteristics of the Pamirian race (LIPTÁK and VÁMOS, 1969).

8. Skull no. 864. Site of find: Szeged—Kundomb, grave no. 234, Avar Period. A female of adult age. Os malare bipartitum on the right side (Fig. 3, 3), with Worm-type bones in the lambdoid suture, and bilateral os epiptericum. From a taxonomic viewpoint the find primarily reveals the features of the Cromagnoid-B race (LIPTÁK and MARCSIK, 1966).

9. Skull no. 861. Site of find: Zenta—Farkas farm (Yugoslavia), grave no. 2, Arpadian age. The find is in the Vojvodanski Muzej, Novi Sad. A female of juvenile age. Os malare bipartitum on the left side (Fig. 3, 4), with Worm-type bones in the lambdoid suture. The find exhibits the characteristics of the Nordic race (BARTUCZ and FARKAS, 1958).

10. Skull no. 1175. Site of find: Kiszombor, grave no. 60/II, Gepid. The skull of a child of about six years (BARTUCZ, 1936), on which bilateral os malare bipartitum (Fig. 3, 5—6) can be observed. The right sutural bone is missing, but its position can be established unambiguously. As a result of the fragmentation of the find, the presence or absence of other anomalies can not be established.

Discussion

From among 1860 skulls in palaeoanthropological material ranging in date from the Middle European Copper Age to the 17th century A.D., os malare bipartitum was observed in 10 cases (0.54%). It is striking that it occurred only in material from the Migration Period (1st millenium A.D.) and the Hungarian Middle Age. Its frequency appears very small compared to the literature data, and supports the observation that this is a rare anomaly.

The distribution of the ten cases with regard to sex and the side of the skull is as follows:

Side	Male	Female	Child	Total
Right	—	2	—	2
Left	2	1	—	3
Right and left	3	1	1	5
Total	5	4	1	10

In these ten cases the anomaly occurs more often in males and on both sides together, than in females and on only one side of the skull.

In 8 of the 10 cases some other anomaly too was present, which indicates the connection of this phenomenon with other variations. At any event, this appears to confirm that it may be related to the disturbance of the ossification centres.

It is obvious from the distribution according to sex and age that this is a congenital anomaly, which remains throughout the extrauterine life, while the obliteration of the suture takes place in a similar way as for other sutures of the skull. The transverse suture is generally finely serrated on the external surface, whereas its course on the inner surface is simple.

From a taxonomic viewpoint it is noteworthy that Mongolid or Mongoloid character could be observed in 3 of the 8 evaluable finds. Since the number of finds

possessing Mongolid or Mongoloid features among the 1860 skulls examined is relatively small, this suggests that the occurrence of os malare bipartitum is more frequent among the races of a Mongolid character than among the Europeans.

Since the observations do not differ essentially from the literature data, this anomaly can be regarded as being characteristic of the entire human race, but at the same time it is a very rare phenomenon.

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