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Pleistocene Human Bones Found at Pinza-Abu (Goat Cave), Miyako Island — A Short Report*

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Introduction

In August 1979, a human occipital fragment was found by Messrs. I. OSHIRO and Y. NIIGAKI, researchers in Okinawa, from a limestone cave called "Pinza-abu" (Fig. 1), located at the southern part of Miyako Island, Okinawa Prefecture, Japan. Then, in December of the year 1980, an expedition directed by Prof. Y. HASEGAWA

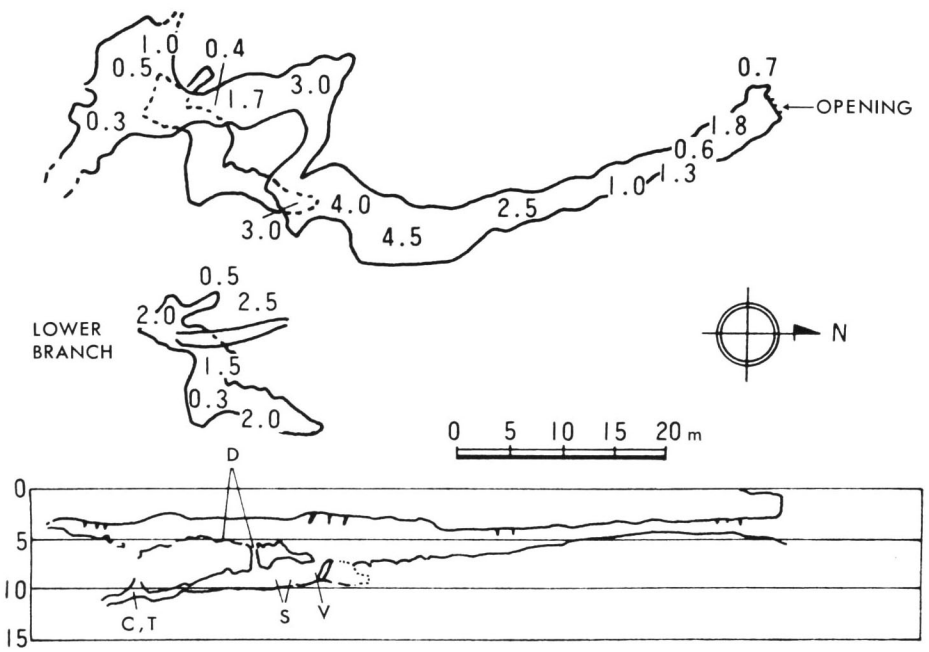

Fig. 1. Plan and profile of the cave "Pinza-abu". Numericals in the cave indicate height in meter. Sites of human remains: T, tooth; S, skull; V, vertebra. Sites of mammals: C, wild cat; D, deer.
(Redrawn after HASEGAWA, 1981)

* This report was also presented at the 35th Joint Meeting of the Anthropological Society of Nippon and Japanese Society of Ethnology in September 1981.

surveyed the surface and uppermost layer of deposit of the site, and discovered additional human remains including parietal and vertebral fragments and a deciduous canine tooth, as well as abundant non-human animal bones.

This is a short and preliminary report on these human specimens, comparing especially with Minatogawa man (SUZUKI, 1981; BABA & ENDO, 1981), which was formerly discovered in Okinawa Island and is supposed to be contemporaneous with the Pinza-abu remains.

Chronological Background

According to the palaeontological interpretation by HASEGAWA (HASEGAWA *et al.*, 1973; HASEGAWA, 1980), deposits of several sites in Ryukyu islands are classified into two stratigraphic layers, based on the mammalian fauna, especially deers and boars, fluorine contents of the bones, and ^{14}C dates. The older layer yields deers and is dated at about 30,000 years BP (Yamashita-cho site in Okinawa Isl. and Gohezu Cave in Ie Isl.). The upper and more recent layer yields boars only (Nagara-baru site in Ie Isl. and Upper Minatogawa deposit). The intermediate of these two layers, which may yield deers and boars together, corresponds to the horizon of Minatogawa man (Lower Minatogawa deposit), and has a date between 15,000 and 20,000 (18,250±650, TK–99; 16,600±300, TK–142) yr BP.

The mammalian fauna in the surface deposit of Pinza-abu includes both deer and boar, wild cat and rats. These and the other mammalian species found are totally extinct there. Therefore, HASEGAWA (1981) tentatively concludes that a majority of the bones, including the human bones, is derived from Late Pleistocene, having an age probably comparable to that of Minatogawa man.

Fluorine content of the Pinza-abu parietal bone has been determined by MATSU'URA (1981a), using an ion-selective electrode (see MATSU'URA, 1981b), and a value of 0.655% was obtained. This level of fluorine found is comparable to those for the Late Pleistocene human fossils from Mikkabi and Hamakita sites in central mainland Japan.

Materials and Description

Occipital and Supernumerary Bones (Figs. 2 and 3)

An almost complete squamous part has been reconstructed from several fragments of the occipital bone. Main dimensions of it are shown in Table 1. This occipital squama has large sagittal arcs, relatively to the chord measurements, particularly between lamba and inion, compared with those of recent Japanese. It means that this bone has a marked degree of curvature. No external occipital protuberance as frequently seen in recent crania exists. Instead, a transverse occipital torus is observable with two crescent lateral extensions, which are directed laterally towards asterions. On the upper side of the middle of the torus, there exists a slightly depressed rough-surfaced area, which is transversely ellipsoid in shape, These features

Table 1. Maesurements of occipital bone (mm).

	Pinza-abu	Recent Kanto Japanese (MORITA, 1950) m	f
Lambda-opisthion			
31. Chord	101* [87]	100.4	97.0
28. Arc	123* [99]	119.1	114.3
Lambda-inion			
31 (1). Chord	71* [54]	67.5	64.1
28 (1). Arc	81* [57]	71.3	68.8
Inion-opisthion			
31 (2). Chord	39		
28 (2). Arc	42	47.8	45.5
Bi-asterionic			
12. Breadth	104	108.4	104.2

* Measured using assumed lambda as a landmark, on the supernumerary bone in the lambda region, determined as the crossing point of the two extensions of lambdoid sutures.

[ ]: Top of the occipital bone is used as lambda.

of the torus in the Pinza-abu occipital are similar to those of Minatogawa man (SUZUKI, 1981). But the depression on nuchal plane, the lower side of the torus, is more marked, and the lateral portions of the torus are situated higher in the former than in the latter.

On the internal sufrace of the bone, very anomalous courses of the sagittal and transverse sulci are observed (Fig. 3).

The supernumerary bone is triangular in shape, with sutural sides less than 4 cm in length. This can be attached to the top of the occipital bone, and considered to be the left *Os apicis* (Fig. 2).

Right Parietal Bone (Fig. 4)

The parietal bone is largely preserved, though some marginal parts are lost. No marked *Tuber perietale* is seen. It is evident that the sagittal dimension of this bone, measured between lower points of the coronal and lambdoid sutures, is considerably small compared to the range of recent parietals. This character is also common in three Minatogawa skulls, whose cranial capacities are evenly smaller than the recent Japanese standard.

Lumber Vertebra 5 (Fig. 5)

The lumber vertebra 5 from Pinza-abu is preserved with most outline of its body, but some part of the arch is broken and lost. The dimensions of this bone are compared with those of Minatogawa specimen (BABA & ENDO, 1981) and recent Japanese (OKAMOTO, 1930) in Table 2.

It is noticed that the Pinza-abu vertebra is considerably smaller than the recent Japanese mean in transverse diameters of the body, whereas its sagittal and vertical diameters except ventral height are comparable to those of the latter. Such small breadth of the vertebral body appears in the specimen of Minatogawa man.

Table 2. Measurements of vertebra L-5 (mm).

	Pinza-abu	Minatogawa II (BABA & ENDO, 1981)	Recent Kinai Japanese (OKAMOTO, 1930)* m M	S.D.	f M	S.D.
Body						
Height						
1. Ventral	26	23	24.2	2.0	22.9	1.7
2. Dorsal	22	(18)	21.8	1.7	20.5	1.8
3. Middle	20	—	20.8	1.7	20.0	1.7
Sagittal diameter						
4. Cranial	31	31	33.9	2.2	30.6	2.0
5. Caudal	30	—	32.6	2.3	29.8	2.2
6. Middle	29	—	31.3	2.1	28.5	2.3
Transverse diameter						
7. Cranial	43	43	50.9	3.2	46.5	3.6
8. Caudal	44	46	51.0	3.9	47.3	3.6
9. Middle	41	41	47.3	3.0	44.0	3.8
Vertebral canal						
10. Sagittal d.	(16)	11	16.1	2.7	16.5	2.2
11. Transverse d.	20	24	26.5	2.2	25.1	2.8

* Means and standard deviations calculated by the present author from original measurements.

Table 3. Measurements of lower deciduous canine (mm).

	Pinza-abu (right)	Recent Japanese (Mean) (FUJITA, 1964)
Crown		
Mesio-distal diameter	6.4	5.8
Labio-lingual diameter	6.5	5.3
Height	[7.0]	6.9

[ ]: Affected by attrition.

Lower Right Deciduous Canine (Fig. 6)

The crown of the lower right deciduous canine is well-preserved, but the root is mostly broken off. The wear of the tooth is fairly advanced, and inclined distally.

Three diameters of this tooth are shown and compared with recent Japanese means (FUJITA, 1964) in Table 3. Strikingly large size of the Pinza-abu canine is apparent, especially in its labio-lingual diameter. It slightly exceeds the mesio-distal diameter, the condition which is reversely observed among ordinary recent lower deciduous canines.

The labial surface has a marked swelling. On the lingual surface, both the marginal ridges and a central ridge are developed.

Conclusion

Some of the characteristics of the Pinza-abu human remains mentioned above show a certain similarity to those of Minatogawa man, and some are considered to be archaic features. This is probably due to close relationships between Minatogawa and Pinza-abu men in space and time. It is further suggested that the specimens from these two sites represent one and same population which inhabited Ryukyu Islands in Late Pleistocene period, though its origin and course of migration and isolation are unknown at present.

Acknowledgements

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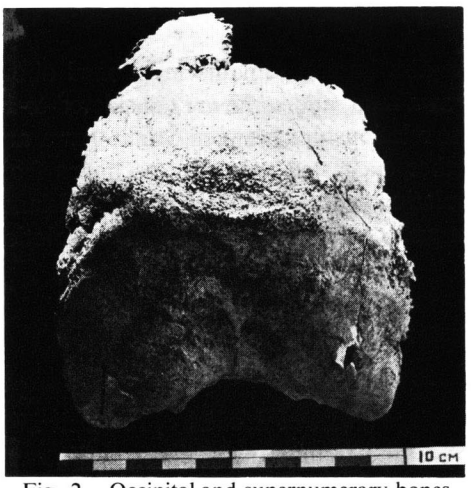

Fig. 2. Occipital and supernumerary bones, external view.

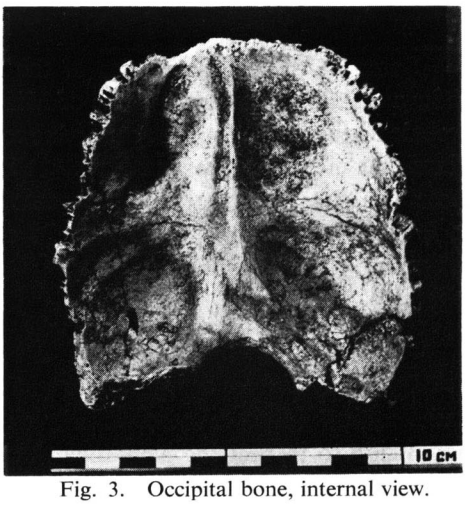

Fig. 3. Occipital bone, internal view.

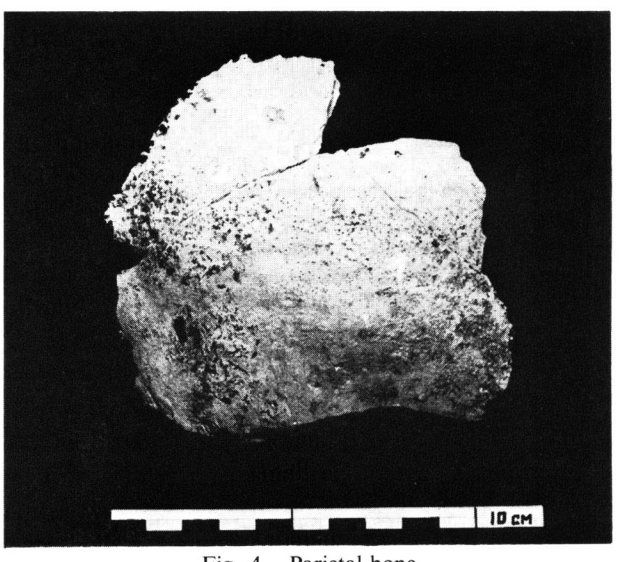

Fig. 4. Parietal bone.

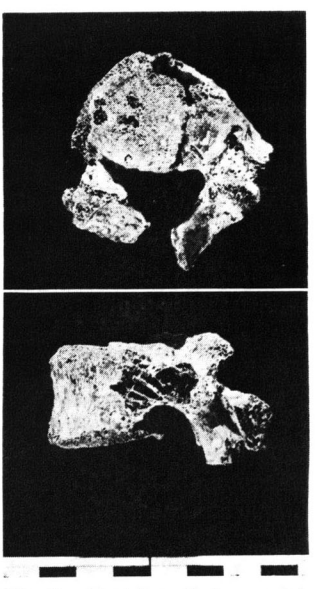

Fig. 5. Vertebra L-5, cranial and left lateral views.

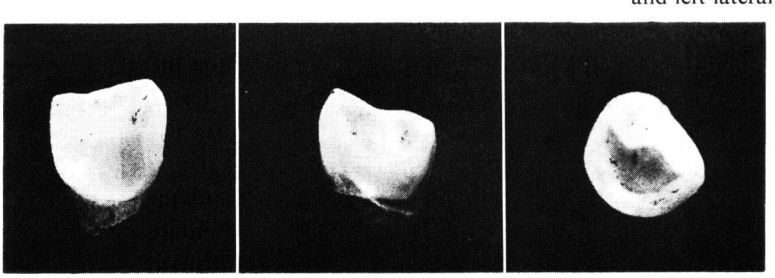

Fig. 6. Lower right deciduous canine, labial (left), lingual (middle) and coronal (right) views. ×2.5 natural size.