

Inventory of the human mummy specimens stored in Japan

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Abstract Although there are some reports on mummy specimens stored in Japan, summarized information on them has not yet been reported. The purpose of this study is to make the inventory of them. Based on original definition of mummy, 64 cases were identified.

Key Words: mummy, Sokushinbutsu, Adipocere, Japan

Introduction

In the field of physical anthropology, human remains other than skeleton are important scientific specimens of academic value. Mummies can reveal information that is useful to recovery past people's views of life, the afterworld, and their views of the body as well as their mummification techniques, and so on (Aufderheide, 2003). The application of new scientific methods, such as DNA analysis, radiocarbon dating, and stable isotope analyses, can provide opportunities to obtain more information from mummies than only human skeletal remains (Fernández *et al.*, 1999; Shinoda *et al.*, 2006; Schuenemann *et al.*, 2017).

In Japan, several specimens of mummy have been stored and reported (Yamada *et al.*, 1996). Among them, Buddhist mummies, which are called as the Sokushinbutsu in Japanese, have been the most researched (Morimoto, 1993). The Group for Research of Japanese Mummies published the historical book "Research on Mummies in Japan" in 1969 (Group for Research of Japanese Mummies, 1969). Dr. Ogata Tamotsu, a member of the group reported the anthropological aspects of the Sokushinbutsu in this book, and has contributed to their preservation both physically and in terms of knowledge (Ogata, 1969).

Thanks to his efforts, the Sokushinbutsu have maintained their forms and remain as objects of religious worship to this day.

Several natural mummies are also stored in Japan. In particular, bodies in adipocere have been found accidentally in archaeological sites in Japan (Yamada *et al.*, 1996; Kamiya, 2000; Sakaue and Kajigayama, 2020). There are also several mummies of foreign cultures stored in Japanese research institutes and museums (Morimoto and Hirata, 1993; Morimoto *et al.*, 1998; Kamiya, 2000).

However, a summarized inventory of the mummies stored in Japan has not yet been reported. This means that it is difficult to even check the conditions of the mummies, despite the risk of their future dispersal and destruction in the hot and humid natural environment of Japan.

Therefore, the purpose of this study is to make an inventory of mummy specimens stored in Japan with, including brief information and their storage organization.

Material and Methods

The definition of a mummy varies slightly among researchers. The definition of mummy in this study is f, or a human body with skeletal remains along with soft tissues that can be determined to belong to the person. However, the following cases were excluded.

- 1) Cases in which only hair remains with the bones (Figure 1). This was mainly found at sites of the Edo period. There is almost no record of having hair or not in archaeological report, although many cases have been found if the amount of hair is ignored. Because of the custom of burying bodies with the hair of another person, the hair found cannot be confirmed to belong to that person.
- 2) Cases created for anatomical and educational purposes. These were also excluded because of the large number of specimens and many of them are not listed even in the collection institution.
- 3) Cases used for medicine. There are some written records that indicate that mummified organs have been imported for use in Chinese medicine since the medieval period. However, they remained fragmentary, and its origin were uncertain.

Shrunken heads made up of only skin and hair without bone were included in this study because they were made as part of an important mummy culture and there are several examples that have been imported to Japan (Figure 2).

The survey was conducted by interviewing research institutions, museums, and temples using past reports and papers as references, and only specimens that the author was able to actually observe were counted. Therefore, several previously identified mummies were omitted from this inventory, such as the four mummified bodies of the Fujiwara clan (Yamada *et al.*, 1996).

In this inventory, mummy specimens from foreign countries are described in two major categories: ancient Egyptian and New continental. The categories were determined based on the name of specimen, its skin texture, presence of bandages and resin, and cranial morphology. Japanese mummy specimens are divided into the following categories: “Sokushinbutsu” which are Buddhist mummies stored in temples (Figure 3), “Mummified” which are bodies found in a dry environment (Figure 4), “Adipocere” which are human bodies that were found in a wet environ-



Fig. 1 Example for a skull with hair remains.
This skull was excavated from the Ichigayay-anagimachi site of Edo period, Tokyo.



Fig. 2 Example of the shrunken head.
This mummy (No.18 in Table 1) was stored in the National Museum of Nature and Science.

ment with the presence of white adipose tissue on the skin (Figure 5).

Results and Discussion

The inventory is shown in Table 1. In total, 64 mummy cases were identified.

The oldest Japanese mummy specimen by the

definition of this report is a skull and its brain excavated from the Aoyakamijichi site in the late Yayoi period (approximately 1,800 years ago)

(Fig. 6). The oldest foreign mummy in Japan is Egyptian mummy No. 2, which is stored at the Gunma Museum of Natural History. However,



Fig. 3 Example of Sokushinbutsu.
This sokushinbutsu is of the Bukkai Shonin
(No. 9 in Table 1).

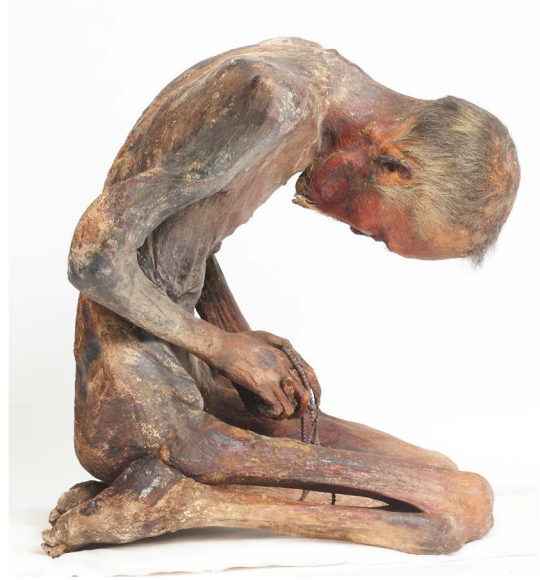


Fig. 4 Example of Mummified.
This mummy of the Herbalist 8 (No.28 in Table 1).



Fig. 5 Example of Adipocere.
This mummy is No.24 in Table 1. Left side of this figure is enlarged left arm and red circle indicates its adipose tissue.

Tabel 1. Inventory of the mummy specimens stored in Japan.

Number	Name	Category	Stored organization	Stored prefecture	Century of creation	References	Note
1	Chukai	Sokushinbutsu	Kaikoji temple	Yamagata	18	Group for Reseach of Japanese Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
2	Enmyokai	Sokushinbutsu	Kaikoji temple	Yamagata	19	Group for Reseach of Japanese Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
3	Tetsuryukai	Sokushinbutsu	Nangakuji temple	Yamagata	19	Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
4	Hommyokai	Sokushinbutsu	Hommyoji temple	Yamagata	17	Group for Reseach of Japanese Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
5	Tetsumonkai	Sokushinbutsu	Churenji temple	Yamagata	19	Group for Reseach of Japanese Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
6	Shinmyokai	Sokushinbutsu	Dainichibo temple	Yamagata	18	Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
7	Koumyokai	Sokushinbutsu	Zoukouin temple	Yamagata	19	Group for Reseach of Japanese Mummies (1969), Hijikata (2018)	recovery and enforcement by Ogata
8	Myokai	Sokushinbutsu	Myojuin temple	Yamagata	19	Hijikata (2018)	recovery and enforcement by Ogata
9	Bukkai	Sokushinbutsu	Kanzeonji temple	Niigata	20	Group for Reseach of Japanese Mummies (1969)	recovery and enforcement by Ogata
10	Kochihojin	Sokushinbutsu	Saishoji temple	Niigata	14	Group for Reseach of Japanese Mummies (1969)	recovery and enforcement by Ogata
11	Zenkai	Sokushinbutsu	Kamonji temple	Niigata	17	Mummies (1969)	recovery and enforcement by Ogata
12	Kochihojin Yutei	Sokushinbutsu	Kanshuji temple	Fukushima	17	Hijikata (2018)	recovery and enforcement by Ogata
13	Syungi	Sokushinbutsu	Myohoji temple	Ibaraki	17	Group for Reseach of Japanese Mummies (1969)	recovery and enforcement by Ogata
14	Gyojun	Sokushinbutsu	Zuikoin temple	Nagano	17	Hijikata (2018)	recovery and enforcement by Ogata
15	Myoshin	Sokushinbutsu	Yokokuraji temple	Gifu	19	Hijikata (2018)	wholebody with extended posture
16	Mexican female mummy	New continental mummy	National Science Museum of Nature and Science	Ibaraki	16	Hijikata (2018)	wholebody with extended posture
17	Inca child mummy	New continental mummy	National Science Museum of Nature and Science	Ibaraki	16-17		ceremonial tsanta (Houlton, 2018)
18	Shrunken head with long hair	New continental mummy	National Science Museum of Nature and Science	Ibaraki			ceremonial tsanta (Houlton, 2018)
19	Shrunken head with middle hair	New continental mummy	National Science Museum of Nature and Science	Ibaraki			ceremonial tsanta (Houlton, 2018)
20	Shrunken head with short hair	New continental mummy	National Science Museum of Nature and Science	Ibaraki			ceremonial tsanta (Houlton, 2018)
21	Shrunken head from Hungary No. 1	New continental mummy	National Science Museum of Nature and Science	Ibaraki			commercial shrunken head (Houlton, 2018)
22	Shrunken head from Hungary No. 2	New continental mummy	National Science Museum of Nature and Science	Ibaraki			commercial shrunken head (Houlton, 2018)
23	mummy of No. 300 burial of Yanakasansakicho site	Adipocere	National Science Museum of Nature and Science	Tokyo	19	Kajigayama (2000)	wholebody buried in a ceramic pot
24	Brothers adipocere from Aichi (Elder)	Adipocere	National Science Museum of Nature and Science	Ibaraki	19		wholebody

Tabel 1. Continued.

Number	Name	Category	Stored organization	Stored prefecture	Century of creation	References	Note
25	Brothers adipocere from Aichi (Younger)	Adipocere	National Science Museum of Nature and Science	Ibaraki	19		wholebody
26	Female adipocere from Aichi	Adipocere	National Science Museum of Nature and Science	Ibaraki	18		wholebody
27	Partially adipocere from Tokyo Shinjuku	Adipocere	National Science Museum of Nature and Science	Ibaraki	18	Sakaue and Kajigayama (2020)	partially dipocere muscles
28	Mummy of the Herbalist	Mummified (artificial)	National Science Museum of Nature and Science	Ibaraki			wholebody
29	Mummy of Penhndjiuu	Egyptian mummy	The University of Tokyo	Tokyo	B.C. 2–11	Kamiya (2000)	wholebody with bandage and coffins
30	Egyptian mummy of girl	Egyptian mummy	The University of Tokyo	Tokyo	B.C. 6?	Kamiya (2000)	wholebody with bandage
31	Egyptian mummy head	Egyptian mummy	The University of Tokyo	Tokyo		Kamiya (2000)	head with bandages
32	Mummy from Toyama pref.	Mummified	The University of Tokyo	Tokyo		Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
33	Mummy from Yamagata pref.	Mummified	The University of Tokyo	Tokyo		Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
34	Mummy like Yokan (sweet bean jelly)	Mummified?	The University of Tokyo	Tokyo	19	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
35	A kind of permanent corpse	Adipocere	The University of Tokyo	Tokyo	18	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody buried in a ceramic pot
36	Adipocere from Ibaraki pref.	Adipocere	The University of Tokyo	Tokyo	19	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
37	Adipocere from Tokyo Yanaka	Adipocere	The University of Tokyo	Tokyo	19	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
38	Adipocere from Tokyo Fukagawa	Adipocere	The University of Tokyo	Tokyo	19	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
39	Adipocere from Tokyo Fukagawaa	Adipocere	The University of Tokyo	Tokyo	19	Yamada <i>et al.</i> (1996), Kamiya (2000)	wholebody
40	Amerindian's mummy	New continental mummy	The University of Tokyo	Tokyo			wholebody without textiles
41	Shrunken head from Equador in Tokyo Univ.	New continental mummy	The University of Tokyo	Tokyo			ceremonial tsanta (Houlton, 2018)
42	Mexican infant mummy	New continental mummy	The University of Tokyo	Tokyo			wholebody without textiles
43	Mummy of Pashierienptah	Egyptian mummy	Tokyo National Museum	Tokyo	B.C. 8–10	Suzuki (1998)	wholebody with bandage and coffin
44	reconstructed mummy	New continental mummy	Niigata University	Niigata			recovery and enforcement as seen in Sokushinbutsu by Ogata
45	Child mummy in Chanecay culture	New continental mummy	Niigata University	Niigata			wholebody with wrapped by textiles
46	Infant mummy in Chanecay culture	New continental mummy	Niigata University	Niigata			wholebody with wrapped by textiles
47	Bolivian mummy	New continental mummy	St. Mariama University school of Medicine	Kanagawa	B.C. 1	Morimoto and Hirata (1993)	wholebody without textiles
48	Egyptian mummy No. 1	Egyptian mummy	Gunma Museum of Natural History	Gunma	B.C. 5	Morimoto <i>et al.</i> (1998)	head with bandages
49	Egyptian mummy No. 2	Egyptian mummy	Gunma Museum of Natural History	Gunma	B.C. 48	Morimoto <i>et al.</i> (1998)	head with bandages
50	Egyptian mummy No. 3	New continental mummy?	Gunma Museum of Natural History	Gunma	12	Morimoto <i>et al.</i> (1998)	head with cranial deformation
51	Egyptian mummy No. 4	Egyptian mummy	Gunma Museum of Natural History	Gunma		Morimoto <i>et al.</i> (1998)	right hand
52	Egyptian mummy No. 5	Egyptian mummy	Gunma Museum of Natural History	Gunma		Morimoto <i>et al.</i> (1998)	right foot

Tabel 1. Continued.

Number	Name	Category	Stored organization	Stored prefecture	Century of creation	References	Note
53	Egyptian mummy No. 6	Egyptian mummy	Gunma Museum of Natural History	Gunma		Morimoto <i>et al.</i> (1998)	right and left feet
54	Shrunken head from Equador in Tenri Univ. No. 1	New continental mummy	Tenri University Sankokan Museum	Nara			ceremonial tsanta (Houlton, 2018)
55	Shrunken head from Equador in Tenri Univ. No. 2	New continental mummy	Tenri University Sankokan Museum	Nara			ceremonial tsanta (Houlton, 2018)
56	Shrunken head in National Museum of Ethnology	New continental mummy	National Museum of Ethnology	Osaka			ceremonial tsanta?
57	Egyptian mummies in Kyoto Univ.	Egyptian mummy	Kyoto University	Kyoto			at least 3 pieces of Egyptian mummies
58	South American mummies in Kyoto Univ.	New continental mummy	Kyoto University	Kyoto			at least 10 pieces of New continental mummies
59	Brain within skull No. 5	Adipocere?	Tottori Prefectural Museum	Tottori	2	Inoue and Matsumoto (2002)	excavated at Aoyakamijichi site
60	Brain within skull No. 8	Adipocere?	Tottori Prefectural Museum	Tottori	2	Inoue and Matsumoto (2002)	excavated from the Aoyakamijichi site
61	Brain within skull No. 32	Adipocere?	Tottori Prefectural Museum	Tottori	2	Inoue and Matsumoto (2002)	excavated at Aoyakamijichi site
62	Adipocere from Fukuoka pref.	Adipocere	Kyushu University	Fukuoka	18?		wholebody
63	Adipocere of woodcutter from Miyagi pref.	Adipocere	Tohoku University	Miyagi	20		wholebody
64	Adipocere of a Buddhist priest from Hyogo pref.	Adipocere	Kobe City Center For Archaeological operations				wholebody with apparently natural mummy

as Kondo *et al.* (1998) point out, the estimated age is likely to be different from the actual age of the mummy.

Although Morimoto *et al.* (1998) reported that “Egyptian mummy No. 3” of the Gunma Museum of Natural History was made in ancient Egypt, it appears to be a New continental mummy based on its artificial deformation of skull, high values of delta C thirteen (-9.4%) and newer radiocarbon dating (calAD1170-1180) (Kondo *et al.*, 1998), as well as morphological features of the face (flat at nasal root and prognostic prognathism, Figure 7).

Several mummies of unknown origin without any information are stored at Kyoto University; at least three Egyptian mummies and ten New continental mummies are included, based on the bandage wrapping and cranial morphology. In particular, the Egyptian mummy shown in Figure 8 is very distinctive and may be from the early stages of ancient Egyptian civilization. A more detailed analysis, including partial destruction of the specimen, is necessary and will be published soon.

Most of the Sokushinbutsu, except for two individuals, were recovered and reinforced by Dr. Ogata (Figure 9). As he reported (1969), all of the Sokushinbutsu had been repaired by believers until 1969. However, their state of preservation was still quite poor and their damage would have worsened if they had not been refurbished by Dr. Ogata. The recovery process that he carried out were important in terms of preserving the appearance of the Sokushinbutsu to the present day. However, it is difficult to determine the condition of the mummy at the time of its creation.

The number of adipocere bodies has been counted as high as 12 in Japan (Figure 10), and new case has also been excavated recently (Sakaue and Kajigayama, 2020). This is because people in Edo city (now Tokyo) were buried under a marshy area with abundant underground water, people of certain classes were buried in sturdy ceramic jar coffins, and not much time has passed. Although the physical characteristics of



Fig. 6 Skull No.8 and its contained brain excavated from the Aoyakamijichi site.



Fig. 7 Photo and 3D reconstruction of CT images of Egyptian mummy No.3 of Gunma Museum of Natural History.

people of the Edo period have been clarified from skeletal remains and literature, further knowledge may be gained using these mummies.

The issues that came to light as a result of this survey include: 1) the storage conditions are not always ideal, and many of the mummies have mold; 2) there is still the possibility of finding new information on mummies other than those listed here; 3) it is necessary to examine specimens in which there are only hair remains with the skeletal remains; 4) continuous application for research of the mummies that were not

allowed to be surveyed at this time is necessary, for example, the mummies of the Fujiwara clan; 5) it is also important to record the current status of the mummies and pass them on to future generations with analyses of CT imaging, radiocarbon dating, DNA analysis, and other methods. I plan to address these issues in the future.

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Fig. 8 Child of Egyptian mummy stored in Kyoto University.
Bandage fragments adhered to the skin of this mummy (No.57 in Table 1).



Fig. 9 Traits of recovery and reinforcement of the Sokushinbutsu by Dr. Ogata.
Some of articular joints were held in place using hemp threads, and the spine was fixed with colored paraffin.

Fernández, J., H. O. Panarello, and J. Schobinger (1999)
The Inca mummy from Mount Aconcagua: Decoding the geographic origin of the “messenger to the deities”



Fig. 10 Adipocere of a Buddhist priest.
This mummy is No.64 in Table 1.

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