Sulman Mummy

Impact ID: IMP00008

Institution: Chatham-Kent Museum

Date of Acquisition: 1943

Contact: Stephanie Saunders

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Image Modality: CT, x-ray

KVP: 120

X-Ray Tube Current: 90

Acquisition Date: N/A

Manufacturer: GE Medical Systems

Manufacturer Model Name: LightSpeed Ultra

Country: Egypt

Site: unknown

Time Period: Ptolemaic

Dynasty: unknown

Earliest Date: 200 BC

Sex: Female

Age: 30 years

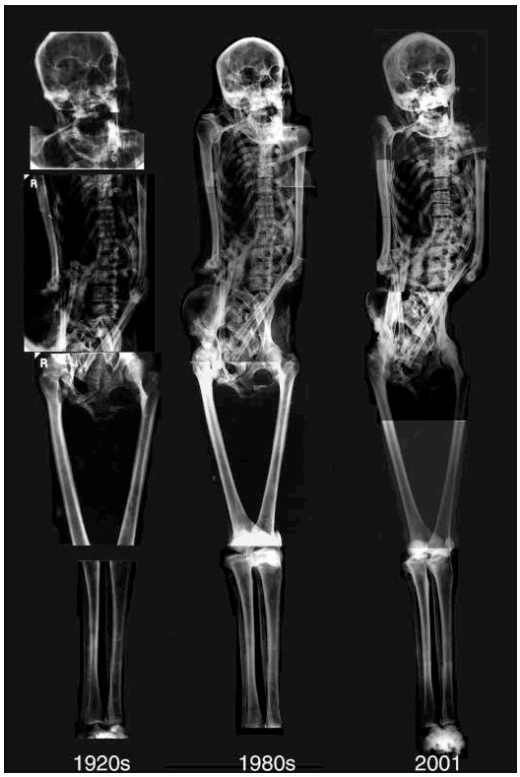

Figure 1. Comparison of radiographic images (Gardner et al., 2004)

Background:

The Sulman family of Chatham, Ontario went on many trips across the world collecting artifacts for a personal collection back home (Chatham-Kent Museum, 2017; Nelson et al., 2002). The mummy was brought back to Chatham as one of their artifacts after they visited Egypt and purchased several pieces from the Cairo Museum (Chatham-Kent Museum, 2017; Gardner et al., 2004; Nelson et al., 2002). The Sulman family was told the mummy was a "Ptolemaic princess" (Chatham-Kent Museum, 2017; Nelson et al., 2002). In 1945, the family donated the mummy to the Chatham-Kent Museum, where it has stayed since (Nelson et al., 2002). The mummy has been radiographed four times since arriving in Canada.

The first scan took place in the 1920s by a local doctor when it was first purchased by the Sulman family (Chatham-Kent Museum, 2017; Gardner et al., 2004). Then scanned again in the 1980s by the Canadian Conservation Institute while they restored the wrappings (Nelson et al., 2002). Finally, two more times by Gardner et al. (2004) in 2001 and 2003. The 2001 radiological studies began when the Engel Brothers Media visited Chatham, Ontario to film an episode on the Sulman Mummy's scans for *The Mummy Roadshow* for the National Geographic Channel (Chatham-Kent Museum, 2017; Gardner et al., 2004; Nelson et al., 2002). The main goal of these scans was to determine the definite sex and to create an osteobiography for the Sulman mummy (Nelson et al., 2002). The scans in 2001 included anteroposterior, lateral, and oblique views of the mummy (Gardner et al., 2004). In 2003, the team conducted more scans, but this time with advanced CT technology and laser scanning to create a virtual 3D reconstruction (Gardner et al., 2004).

Pathological Features:

On plain film x-rays, the whole mummy is intact, but many of the bones are shifted out of proper anatomical positioning. The origin of this mummy is unknown, but it has travelled thousands of miles in its recent past and has been positioned both horizontally and vertically which could have caused the positioning. However, comparison to the 1920s x-ray images showed the Sulman mummy has been in this position since before they were taken. The mummy also includes some unusual cotton stuffing which is thought to have been added for the mummy trade and rewrapped incorrectly, before the Sulman family purchased the mummy (Gardner et al., 2004; Nelson et al., 2002). The mummy being rewrapped incorrectly explains the incorrect bone positioning.

Due to the shifted anatomical structure, determining the sex of the Sulman mummy was difficult. When purchased, the family was informed they were buying a "princess", but the initial sexing in 1980s suggested the mummy was a male (Gardner et al., 2004; Nelson et al., 2002). In 2001, an x-ray was done on an oblique angle to the pelvis, this angle revealed features that confirmed the mummy is actually a female (Gardner et al., 2004; Nelson et al., 2002).

Although the mummy is female, the signs of bone health do not align with those seen in Egyptian royalty, implied by the "princess" naming. Anthropometric analysis on the tibia yield a height estimate of 161cm, later confirmed by CT data, which is considered too short for the Egyptian royal family (Gardner et al., 2004; Nelson et al., 2002). Overall, the Sulman mummy has good bone health and no major disease markers, but there are some small indicators. There is some osteophytic lipping on thoracic and lumbar vertebrae and arrested growth lines, Harris lines, on the tibiae which indicate cyclical stress during the childhood (Gardner et al., 2004; Nelson et al., 2002). The short stature and childhood stress remove the possibility of the mummy being from the royal family, but the small amount of degenerative disease means they were not a labourer either. This means the Sulman mummy was likely part of the middle class. During the Ptolemaic Period every Egyptian that could raise the funds for mummification was mummified when they passed, so this coincides with the mummification (Gardner et al., 2004).

The Sulman mummy was not eviscerated or excerebrated. X-ray and CT images both show cloudy mass in the cranial cavity and undamaged ethmoid bones, indicating the mummy was not subjected to excerebration through the nasal passage (Gardner et al., 2004; Nelson et al., 2002). Additionally, the CT images show clear sulci, confirming presence of brain matter (Gardner et al., 2004). On the radiographic images there is a denser area in the upper right abdomen, initially believed to be a canopic jar or organ pack, but CT analysis confirmed it is desiccated, untreated organs (Gardner et al., 2004).

The age of this individual was determined to be in her 30s. This estimation was determined on her basi-sphenoid fusion, medial clavicle fusion, no signs of osteoporosis, and only slight development of osteophytes on her spine (Nelson et al., 2002). Her joints show no signs of advanced degeneration, only Harris lines in her tibiae (Nelson et al., 2002). Her dental health is consistent with the mild wear seen in the rest of her bones. There is evidence of a few caries in her maxillary teeth and a mandibular molar is broken, but it is unknown if this is post-mortem damage or peri-mortem trauma (Nelson et al., 2002). Her teeth do show advanced wear patterns, which is common in Egyptian mummies (Nelson et al., 2002).

Analysis of CT images of the cranium revealed the Sulman mummy was wrapped while wearing a headband decorated with beads (Gardner et al., 2004). After creating a 3D reconstruction of the cranium, a facial reconstruction was carried out. Using the 3D reconstruction of the entire mummy it is now possible to conduct virtual unwrappings and disassembly of the mummy for analysis and measurement (Gardner et al., 2004).

There is speculation about the true origin of the Sulman mummy as after completing the facial reconstruction on a 3D model, some believe the mummy's features closer resemble those of Nubian ancestry than those with Egyptian ancestry (Chatham-Kent Museum, 2017). In 2001 there was an attempt to use endoscopic sampling to conduct DNA testing, but the mummy was deemed to be wrapped too tightly from the additional cotton padding (Chatham-Kent, 2017; Nelson et al., 2002).

References

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