ANTHROPOLOGIE • XLVIII/2 • pp. 113–115 • 2010

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THE REMAINS OF PHARAOH AKHENATEN ARE NOT YET IDENTIFIED: COMMENTS ON "BIOLOGICAL AGE OF THE SKELETONISED MUMMY FROM TOMB KV55 AT THEBES (EGYPT)" BY EUGEN STROUHAL

AGE DETERMINATION

As a forensic anthropologist, for many years I have held the view that photographic images of the KV55 bones (Harrison 1966) show that they can not be those of the pharaoh Akhenaten, who must have been in his 30s at death, because they are those of a man who died in his in late teens or very early adulthood: dental attrition was negligible, the maxillary right third molar was not visible (although both photograph and X-radiograph were unclear), the pubic symphyseal surface was clearly in the youthful state of "billowed", the lateral epicondylar epiphysis of the left humerus appeared to be in the process of fusing and the epiphyses of femoral head and greater trochanter still showed fusion lines.

Hawass and colleagues (2010), identify the KV55 remains as those of Akhenaten by asserting that their examination found evidence of a more advanced age. This evidence is not made explicit, either in the paper or in the e-Appendix to it, but in a television programme on the subject a member of Hawass's team asserts that the condition of the spine is that of a man in his 30s at least.

Using the data obtained by Strouhal from his examination of the remains, and generously shared with me in advance of publication (Strouhal in this volume), I have applied the standards which would be used in forensic anthropology in north-west Europe and the USA (*Table 1*).

Discounting the lateral epicondyle epiphysis as an anomaly (but which, were it to be taken into account, would only make the individual's age lower), this skeleton is clearly that of a very young adult, probably aged 20 years or over at death but not more than 23 years. This conclusion is in complete agreement with Strouhal's, and is particularly significant because it has been derived from different standards.

PROBLEMS ARISING FROM THE SCIENTIFIC EVIDENCE

It is not necessary to rehearse or reference the extensive Egyptological debates on this subject; only those few known facts or widely-accepted views are included below.

The DNA analysis provides the lineage Yuya and Thuyu > Tiye and Amenhotep III > KV55 / KV35YL > Tutankhamun ?/ KV21A > Tutankhamun foetuses (where / indicates siblings as well as mated, ?/ indicates possible mated siblings or close blood relationship but with inadequate DNA preservation). This lineage has led Hawass *et al.* (2010) to conclude that KV55 is the skeleton of Akhenaten and KV35YL therefore, the body of one of his wives. There is little justification for this conclusion if DNA, anthropological evidence and documentary facts are linked:

1. KV35YL has been shown to be the sister of KV55, but Nefertiti was never recorded as being Akhenaten's sister or the daughter of Amenhotep III, and neither was the secondary-wife Kiya.
2. Even were the name of one of Akhenaten's sisters to be invoked as a potential mother to Tutankhamun – several sisters are known, though perhaps only the eldest

TABLE 1. Age determination using standards of Scheuer, Black 2000 and others.

Bone/tooth	Location	State of fusion etc	Age	Reference
skull	spheno-occipital synchondrosis	fused	>16	(Suchey 1996)
skull	sutures	fusion commencing in sections of coronal and lambdoid	?<35	(Suchey 1996)
third molars		erupted except right maxillary which is just above alveolar plane	c. 16; >18 if R max impacted	(Ubelaker 1989)
molars	occlusal surfaces	attrition on 6s early stage 3 (tiny dots/lines of exposed dentine), attrition on 8s stage 0 (no dentine exposure)*	17–25	(Brothwell 1981)
vertebrae	growth fissures = incomplete annular epiphyses	present in C3–7, T1–8	<25	(Scheuer, Black 2000)
	body surfaces	no pathological changes (ie no osteophyte development)	<35	(Ortner, Putschar 1985)
sacrum	spinal processes	traces of coalescence	puberty –early 20s	
sternum	segments 1–2	fused	>20	(Scheuer, Black 2000)
	segments 2–3	recently fused	>16	(Scheuer, Black 2000)
ribs	heads	unfused or recently fused	≤25	(Scheuer, Black 2000)
scapulae	vertebral borders	fusing	<23	(Scheuer, Black 2000)
clavicle	medial epiphysis	not yet fused	if flake, 16–21; if large epiphysis 24–29	(Scheuer, Black 2000)
left humerus	lateral epicondyle epiphysis	fusing	12–14 BUT:	(Scheuer, Black 2000)
	medial epicondyle epiphysis	fused	>14–16	(Scheuer, Black 2000)
pelvis	pubic symphysis	billowed/furrowed = Suchey-Brooks phase I	18.9±2.3	(Brooks, Suchey 1990)
	iliac crest	fusing	15–22	(Scheuer, Black 2000)
	ischial tuberosity/ramal epiphysis	fusing	<23	(Scheuer, Black 2000)
femur	head epiphysis	recent fusion (sulci remaining)	≤20	(Scheuer, Black 2000)
	greater trochanter	recent fusion (sulci remaining) NB visible in photographs but not commented on by Strouhal	≤18	(Scheuer, Black 2000)

* This is noteworthy due to its contrast with the marked attrition almost invariably found on ancient Egyptian teeth, the first molar being very severely worn by the time the third molar erupts (Duhig 2000).

survived to adulthood — Akhenaten must have been in his 30's or older at death because in his last years his eldest daughter was in her late teens or early 20s; KV55 is too young, as shown above.

It is necessary, therefore, to conclude that KV55 is another royal male. Amenhotep III's eldest son, Thutmose, had been the heir but predeceased his younger brother Akhenaten and hence would have sired a son, if any, too old to be Tutankhamun. The name Smenkhkare appears only within the reign of Akhenaten, but were he a younger brother of Akhenaten, he would of course have the KV55 DNA profile showing his descent from Amenhotep III and Tiye. He was known to be married to Akhenaten's eldest daughter Meritaten but as she would be carrying some genes from her mother Nefertiti her genetic profile could not be that of KV35YL.

It is essential that, whether the KV55 skeleton is that of Smenkhkare or some previously-unknown prince – and, sadly, recognising that any proposed lineages leave us with new dilemmas in place of the old – the assumption that the KV55 bones are those of Akhenaten be rejected before it becomes "received wisdom".

REFERENCES

BROOKS S., SUCHEY J. M., 1990: Skeletal age determination based on the os pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods. *Hum. Evol.* 5, 3: 227–238.

BROTHWELL D. R., 1981: *Digging up bones*. Oxford University Press and British Museum, Oxford.

DUHIG C., 2000: *They are eating people here! Skeletal indicators of stress in the Egyptian First Intermediate Period.* PhD dissertation, University of Cambridge.

HARRISON R. G., 1966: An anatomical examination of the pharaonic remains purported to be Akhenaten. *J. Egypt. Archaeol.* 52: 95–119.

HAWASS Z., GAD Y. Z., ISMAIL S., KHAIRAT R., FATHALLA D., HASAN N., AHMED A., ELLEITHY H., BALL M., GABALLAH F., WASEF S., FATEEN M., AMER H., GOSTNER P., SELIM A., ZINK A., PUSCH C., 2010: Ancestry and pathology in King Tutankhamun's family. *J. Am. Med. Assoc.* 303: 638–647.

ORTNER D. J., PUTSCHAR W. G. J., 1985: *Identification of pathological conditions in human skeletal remains*. Smithsonian Institution Press, Washington & London.

SCHEUER L., BLACK, S., 2000: *Developmental juvenile osteology*. Elsevier/Academic Press, San Diego & London.

STROUHAL E., 2011: Biological age of the skeletonized mummy from tomb KV55 at Thebes (Egypt). *Anthropologie*, This volume.

SUCHEY J. M., 1996a: Closure of the "basilar suture". In: H. Cho, A. B. Falsetti, J. Mc Ilwaine, C. Roberts, P. S. Sledzik, A. W. Willcox (Eds.): *Handbook of the Forensic Anthropology course.* University of Bradford, NMHM and AFIP, Washington, D.C.

SUCHEY J. M., 1996b: General rules for ageing by cranial suture closure and union of the medial clavicle. In: H. Cho, A. B. Falsetti, J. Mc Ilwaine, C. Roberts, P. S. Sledzik, A. W. Willcox (Eds.): *Handbook of the Forensic Anthropology course*. University of Bradford, NMHM and AFIP, Washington, D.C.

UBELAKER D. H., 1989: Human skeletal remains: excavation, analysis, interpretation. Taraxacum for Smithsonian Institution, Washington.

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