SPECIAL ARTICLE

The Earliest Record of Sudden Death Possibly Due to Atherosclerotic Coronary Occlusion

By WALTER L. BRUETSCH, M.D.

The sudden death of an Egyptian nobleman is portrayed in the relief of a tomb from the Sixth Dynasty (2625-2475 B.C.). Since there is indisputable evidence from the dissections of Egyptian mummies that atherosclerosis was prevalent in ancient Egypt, it was conjectured that the sudden death might have been due to atherosclerotic occlusion of the coronary arteries.

It may be presumptuous to assume that an Egyptian relief sculpture from the tomb of a noble of the Sixth Dynasty (2625-2475 B.C.) may suggest sudden death possibly due to coronary atherosclerosis and occlusion.

Much of the daily life of the ancient Egyptians has been disclosed to us through well-preserved tomb reliefs. In the same tomb that contains the scene of the dying noble, there is the more widely known relief "Netting Wildfowl in the Marshes." The latter sculpture reveals some of the devices used four thousand years ago for catching waterbirds alive. It gives a minute account of this occupation, which in ancient Egypt was both a sport and a means of livelihood for the professional hunter.

The relief (fig. 1), entitled "Sudden Death," by the Egyptologist von Bissing² represents a nobleman collapsing in the presence of his servants. The revelant part of the explanatory text, as given by von Bissing, follows (translation by the author):

The interpretation of the details of the theme is left to the observer. We must attempt to comprehend the intentions of the ancient artist who sculptured this unusual scene. In the upper half (to the right) are two men with the customary brief apron, short hair covering the ears, busying themselves with a third man, who obviously has collapsed. One of them, bending over him, has grasped with both hands the left arm of the fallen man; the other servant, bent in his left knee, tries to uphold him by elevating the head and neck, using the knee as a support. Alas, all is in vain. The movement of the left hand of this figure, beating against the forehead, seems to express the despair; and also in the tightly shut lips one can possibly recognize a distressed expression. The body of the fallen noble is limp. . . . Despite great restraint in the interpretation, the impression which the artist tried to convey is quite obvious. The grief and despair are also expressed by the figures to the left. The first has put his left hand to his forehead. (This gesture represents the Egyptian way of expressing sorrow.) At the same time he grasps with the other arm his companion who covers his face with both hands. The third, more impulsively, unites both hands over his head. . . . The lord of the tomb, Sesi, whom we can identify here, has suddenly collapsed, causing consternation among his household.

In the section below (to the left) is shown the wife who, struck by terror, has fainted and sunk to the floor. Two women attendants are seen giving her first aid. To the right, one observes the wife, holding on to two distressed servants, leaving the scene. . . .

von Bissing mentions that the artist of the relief must have been a keen observer of real life. This ancient Egyptian scene is not unlike the tragedy that one encounters in present days, when someone drops dead of a "heart attack." The physician of today has almost no other choice than to certify the cause of such a death as due to coronary occlusion.

Supported in part by the Southwestern Indiana Heart Association.

438 Circulation, Volume XX, September 1959
Coronary Occlusion in Ancient Egypt

Fig. 1. Tomb relief depicting the sudden death of an Egyptian nobleman (upper right), who collapses in the midst of his family. Two servants busy themselves with the dead noble, while others show their grief with the characteristic gesture—hands to the forehead—expressing sorrow in ancient Egypt. Below, the wife, overcome by emotion, has fainted and sunk to the floor. She is being attended by two women who are trying to revive her. To the right, the wife, holding on to two servants, is being led from the scene. Tomb of Sesi at Sakkara. (Sixth Dynasty 2625-2475 B.C.). (Reproduced from Plate 13B, "Plötzlicher Tod" (Sudden Death), in F. W. von Bissing: Denkmäler Ägyptischer Sculptur. Plates I, 1-57, München, F. Bruckmann, 1914.)

Atherosclerosis Among the Ancient Egyptians

The most frequent disease of the coronary arteries, causing sudden death, is atherosclerosis. What evidence is available that atherosclerosis was prevalent in ancient Egypt?

The first occasion to study this condition in peoples of ancient civilizations presented itself when the mummified body of Meneptah (approx. 1280-1211 B.C.), the reported "Pharaoh of the Hebrew Exodus" from Egypt was found. King Meneptah had severe atherosclerosis. The mummy was unwrapped by the archaeologist Dr. G. Elliot Smith, who sent a piece of the Pharaoh's aorta to Dr. S. G. Shattock of London (1908). Dr. Shattock was able to prepare satisfactory microscopic sections which revealed advanced aortic atherosclerosis with extensive depositions of calcium phosphate.3

This marked the beginning of the important study of arteriosclerosis in Egyptian mummies.
by Sir Marc Armand Ruffer, of the Cairo Medical School (1910-11). 4, 5 His material included mummies ranging over a period of about 2,000 years (1580 B.C.-525 A.D.).

The technic of embalming in the days of ancient Egypt consisted of the removal of all the viscera and of most of the muscles, destroying much of the arterial system. Often, however, a part or at times the whole aorta or one of the large peripheral arteries was left behind. The peroneal artery, owing to its deep situation, frequently escaped the embalmer’s knife. Other arteries, such as the femorals, brachial, and common carotids, had persisted.

In some mummies examined by Ruffer the abdominal aorta was calcified in its entirety, the extreme calcification extending into the iliac arteries. Calcified plaques were also found in some of the larger branches of the aorta. The common carotid arteries frequently revealed patches of atheroma, but the most marked atherosclerotic alterations were in the arteries of the lower extremities. The common iliac arteries were not infrequently studded with calcareous plaques and in some instances the femoral arteries were converted into rigid tubes. In other mummies, however, the same arteries were near normal.

What is known as Mönckeberg’s medial calcification was also observed in some of the mummified bodies. In a histologic section of a peroneal artery, the muscular coat had been changed almost wholly by calcification. In one of Ruffer’s photographic plates, a part of a calcified ulnar artery is shown. The muscular fibers had been completely replaced by calcification.

In the aorta, as in present days, the atherosclerotic process had a predilection for the points of origin of the intercostal and other arteries. The characteristics and the localization of the arterial lesions observed in Egyptian mummies leaves little doubt that atherosclerosis in ancient times was of the same nature and degree as seen in today’s postmortem examinations.

As to the prevalence of the disease, Ruffer ventured to say that the Egyptians of ancient times suffered as much as modern man from arterial lesions, identical with those found in our times. Ruffer was well qualified to make this statement having performed many necropsies on modern Egyptians, Moslems, and other people of the Middle East. In going over his material and examining the accompanying photographic plates of arteries, one can have little doubt that what Ruffer had observed in Egyptian mummies represented arteriosclerosis as it is known today.

Although the embalming left no opportunity to examine the coronary arteries in mummified bodies, the condition of the aorta is a good index of the degree of atherosclerosis present elsewhere. In individuals with extensive atherosclerosis of the aorta, there is almost always a considerable degree of atherosclerosis in the coronary arteries. If Ruffer’s statement is correct that the Egyptians of 3,000 years ago were afflicted with arteriosclerosis as much as we are nowadays, coronary occlusion must have been common among the elderly population of the pre-Christian civilizations.

Furthermore, gangrene of the lower extremities in the aged has been recognized since the earliest records of disease. Gangrene of the extremities for centuries did not undergo critical investigation until Cruveilhier (1791-1873) showed that it was caused by atherosclerotic arteries, associated at times with a terminal thrombus.

**Summary**

The record of a sudden death occurring in an Egyptian noble of the Sixth Dynasty (2625-2475 B.C.) is presented. Because of the prevalence of arteriosclerosis in ancient Egyptian mummies there is presumptive evidence that this incident might represent sudden death due to atherosclerotic occlusion of the coronary arteries.

**Summario in Interlingua**

Es presentate le documentation de un morte subitante en un nobile egypitwen del sexte dynastia (2625 a 2475 a.C.). A causa del preva-
lentia de arteriosclerosis in mumias del ancian Egypto, il ha provas presumptive que iste incidente representa un morte subite causate per le occlusion atherosclerotic del arterias coronari.

REFERENCES

Pre-Harveian Doubts of Galenic Doctrine
The interest in theology had apparently always been smoldering not too far below the surface of Servetus’ mind, and with his additional work on Bibles and religious commentaries it now blazed forth to become the major force in the last years of his life. Although he had previously failed to convince either Zwinglian or Lutheran authorities, nevertheless he seems to have believed that there was yet the possibility of winning over Calvin to his views on the reform of Christianity. Through the aid of a bookseller as intermediary, Servetus entered into correspondence with the Genevan reformer, requesting his explanation on various theological points and then characteristically proceeding to denounce such explanations as Calvin sent. It was, of course, futile from the beginning. Servetus, dogmatic to the end, was interested not in learning but in teaching, and although Calvin broke off the correspondence, Servetus sought to continue it by sending him not only a long series of letters but such various works of Calvin as he could obtain, to which he added insulting marginalia. It was foolhardy and useless except for the enmity that it aroused in Calvin.—Charles D. O’Malley. The Complementary Careers of Michael Servetus: Theologian and Physician. History of Medicine and Allied Sciences 8: 386, 1953.
The Earliest Record of Sudden Death Possibly Due to Atherosclerotic Coronary Occlusion
WALTER L. BRUETSCH

Circulation. 1959;20:438-441
doi: 10.1161/01.CIR.20.3.438

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/20/3/438