PALAEOPATHOLOGY deals with the study of diseases in ancient populations. It helps to answer the basic questions about the disease, and when was it first found. It also sheds light on nutrition and subsistence strategies, and how subsistence strategies could impact the presence of the disease.

It also helps to answer specific questions such as “why do some populations suffer from conditions that others do not?”, “why has the presence of some diseases seemingly changed over time?”, “how might a wide range of variables affect the presence of disease and disease processes?” and “how might differences in human social interaction affect the host-pathogen relationships?”

Palaeopathology provides the link between the past and the present. It can reveal how health and disease have changed through changes in diet, environment and climate. It also helps to understand environmental factors contributing to health and disease. The palaeopathological evidences can either be in form of skeletal remains or as mummified remains.

Skeletal Evidences of Cancer
Considerable evidences of cancer have been found from human skeletal remains. The oldest example of bone tumour is found in the dorsal vertebra of a Mosasaurus from the later Cretaceous period of the Mesozoic era. Some of the most spectacular cases of tumour of skull are reported in the left side of the skull of an ancient Peruvian from Ancon, now curated at the Peabody Museum of Harvard University.

A possible case of aggressive malignant cancer of pelvis has been reported in a young individual from ancient Egypt dating to about 250 AD. Another well-documented case of malignant cancer with the typical radiographic ‘sunburst’ pattern has been observed in the femur of a native Peruvian dating to 800 BP. Other cases reported have been that of a young female femur from the pre-historic population of Oahu in Hawaii, in a cheek bone from the French Middle Ages, in a 17th century mandible from West Virginia, in a young male from the Saxon necropolis of Standlake (England), and in medieval skulls from the Czech Republic. An incomplete skeleton of male aged 45 years with malignant cancer was recovered from a 19th century cemetery site in Wolverhampton, England.

The first evidence of metastatic cancer (that has spread to other parts of body i.e., secondary sites) was found in a medieval skull recovered in 1952. In 1992, an elderly male skeleton was recovered from medieval Canterbury which displayed similar evidences.

A case of prostate cancer was found among the skeleton of a mature male from the Middle Ages, excavated in Svendborg, Denmark. Similar case is reported from a cremated hip bone dating to the 1st century AD.

Bone lesions (area of bone eaten away by cancer) and necrosis (death of body tissue) are described in a human skull dating from 3500 to 3000 BC from Tepe Hissar in Iran and in a skull approximately 4500 years old, from the II to V Egyptian dynasty. A female skeleton with cancer of plasma cells and evidences of recurring cancer dating between the 11th and 15th century was recovered from Iceland.

Meningioma has been described in many ancient human populations with the first case found in pre-historic America and the earliest clear occurrence...
involving a skeleton from Egypt dating to the First Dynasty. Meningioma is a tumour that arises from meninges, the membrane that surrounds brain and spinal cord. A similar case of this cancer is reported from a Roman skull from the United Kingdom.

Evidences of benign tumour have also been reported. Malignant primary bone tumours are very rare in antiquity and continue to be rare in modern populations. The earliest known case is found in a 15-year-old male (about 800-600 BC) from Switzerland.

Other extremely rare evidences of cancer have also been documented. These include histiocytoma in ancient Egypt, eosinophil granuloma in a prehistoric native American child from Illinois, possible Ewing’s sarcoma in a juvenile skull from Bronze Age of Tartaren, Spain and Hand-Schuller-Christian disease in a pre-historic Native American from New York. A tumour of the uterus was reported from 5,000 year old skeletal remains dating to Neolithic period.

**Mummified Evidences of Cancer**

In 1914, a team of archaeologists found a two-thousand-year old Egyptian mummy in the Alexandrian catacombs with a tumour invading the hip bone. In 1932, L.S.B. Leakey, the archaeologist who dug up Lucy, one of the earliest known human skeletons, also discovered a jawline dating 4000 BC from a nearby site that carried the signs of a peculiar form of blood cancer. The presence of rectal cancer is reported in an unnamed mummy who had lived in the Dakhleh Oasis during the Ptolemaic period (CE 200-400).

In the 1990s, Aufderheide, a palaeopathologist discovered a thousand year old gravesite with 140 mummified remains of individuals belonging to the Chiribaya tribe. He found the presence of a ‘bulbous mass’ in the left upper arm of a mummy. In another mummy, he found the presence of thousand-year-old malignant bone tumour.

In addition to the tantalising discoveries of fossilised tumours, bone tumours and nasopharyngeal cancers have been observed in some Egyptian mummies from 5000 BC. Similarly, mummified skeletal remains of the Incas, found in Peru (2400 BC) had lesions characteristic of skin cancer. In another case, lesions found in the skull of a woman from the Bronze Age (1900-1600 BC) are consistent with those that occur in breast cancer or skin cancer.

Finally, evidence for some tumours that produce calcifications can be found in ancient human burials. The ossified masses produced by fibroids of the uterus have been found in correspondence of the small pelvis in many Iron Age female burials in Italy, in neolithic burials in France and Switzerland, in Egypt and in medieval burials in Spain.

**Interpretation**

The interpretation of cancer is one of the most interesting and difficult aspects of palaeopathology. With the exception of mummified remains, palaeopathological materials generally consist of skeletal remains.

There are a considerable number of skeletal evidences of cancer but there is a rarity of such evidences in ancient human mummies. This led some scholars to speculate that a cancerous tissue does not undergo mummification due to some sort of biochemical difference with respect to normal tissues.

However, some researchers have convincingly disproved this speculation. The rarity of cases of cancer in ancient times led some scholars to think that human cancer was unable to produce bone metastasis. This speculation is groundless because palaeopathological evidence in the form of mummified remains is present. The rarity of cancer cases in ancient human populations could be due to factors such as age at death, diet and environmental factors. As life span was shorter in antiquity and as cancers for the most part are diseases of later life, the incidence of cancer is expected to be lower than at present, and the evidence for it in ancient remains is correspondingly scanty.

Even when cancer was present, death may well have been directly or indirectly due to primary lesions before detectable signs of metastasis occurred. However, other factors to explain this lack of evidence include the limitations of the diagnostic methods used by early investigators to study these remains, and the insufficiency of data to provide reliable rate of cancer incidence.

Skeletal and mummified evidences clearly imply that cancer is not a modern disease and it has been a health concern since the dawn of humanity. The understanding of palaeopathology of cancer has the potential to improve our understanding of disease prevention, etiology, pathogenesis and treatment.

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