

## To investigate the degenerative alterations of the spine in Paleopathology

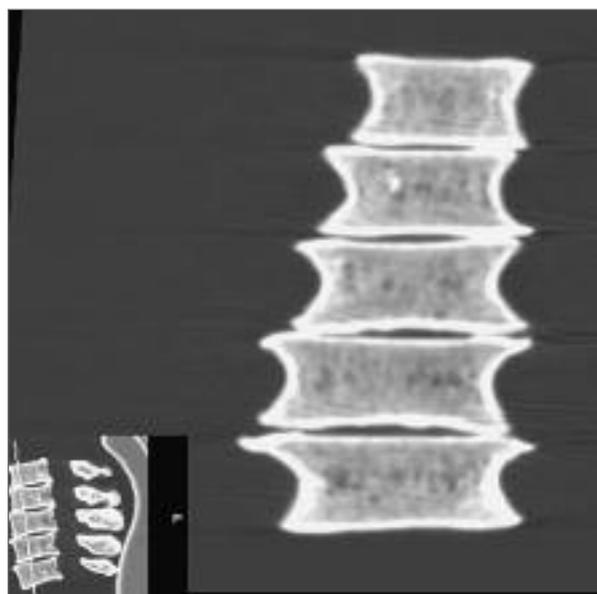
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Dear Editor,

In archaeological studies, paleopathologists frequently focused their studies on detecting degenerative alterations in the spine as a means to estimate age, to determine differences in sex and racial affinity, and to evaluate physical and pathological conditions. Currently, several studies investigate the degree of incidence of osteophytes, porosities, eburneations and Schmorl's nodes. However, osteoarchaeologists still have a conflicting opinion about considering degenerative alterations of vertebrae as an ideal indicator of functional activity. Certainly, the genetic predisposition, the hereditary component, the advanced age and the presence of other diseases play a not secondary role in the onset of the disease. Within the paleopathological models, osteoarthritis represents a position of prime importance. This disease has principally two types of development, proliferative and erosive, but in osteoarchaeological research, it is sometimes difficult to diagnose the latter, as post-mortem digenetic factors can simulate this pathology. Instead, the proliferative arthritic development, in which osteogenesis alters the normal profile of the vertebrae, is more recognizable in archaeological contexts. The Schmorl's nodes are generally found in osteoarchaeological rests but the impact of this pathology on the quality of life (pain, mobility, etc.) is poorly understood. The aims of researches on the osteoarchaeological collections are the following: to show the typical degenerative lesions of the spine in osteoarchaeological material; to propose an investigative method for determining the incidence of disease in antiquity and to associate the presence of these diseases with the lifestyle of the past populations. Human remains collected in our laboratory were recovered in Northern Italy archeological sites and they are dated

back to the period spanning from the 7th to 16th century. We noted a considerable number of vertebrae of subjects aged over 40, which showed degenerative alterations, in particular osteophytes and Schmorl's nodes. The distinctions between the sexes were also analyzed with males showing more severe osteophytic development than female. Osteophytes are much more common in lumbar than in the cervical and thoracic vertebrae. The majority of cases show an initial phase of osteogenic proliferation represented by slight bone at the edges of vertebral bodies. Many subjects between 40 and 50 present an initial stage of Schmorl's nodes confirmed by the radiological investigations. Our contribution is only the beginning of a research that aims to develop in the future, thanks to new necropolis excavations and to greater availability of osteoarchaeo-



**FIGURE 1.** Vertebrae from Caravate necropolis. Coronal section of the portion of the lumbar spine. Vertebrae show a modest spondylosis

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logical material. The degenerative alterations of the spine are frequently found in archaeological populations, tied to their geographical location. The recent paleopathological literature describes the presence of degenerative pathologies of the spine since Neolithic period. Rheumatic disease in ancient Chinese skeletons (5000 BC-1644 AD) testified the presence of those spinal lesions in prehistoric hunter-gatherer, in historic agro-pastoral cultures and in modern people<sup>1</sup>. Some of paleopathological researches focused the investigations on the degree of incidence of osteophytes. The analysis on ancient skeletons from archaeological site of Mamilla (Jerusalem), represent a comprehensive report on the prevalence of osteophytes in the spine of the osteological rests of 1388 individuals. The aim of this research was to reconstruct an anthropological profile of the population, by describing such factors as frequency of pathology and discrete traits, and age at death of the populations<sup>2</sup>. The Schmorl's nodes are usually found in both present and past populations. For example, Schmorl's nodes have been noted in skeletal sample that from 7000 BC to the 20th

century. It is also important to remember anthropological investigations conducted on the Neolithic and Medieval skeletons discovered in Western Switzerland<sup>3</sup>. It is therefore recognized that epidemiological data of the diseases may help research in the study of work activities and lifestyles of ancient populations.

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