A Survey of Joint Disease at the Libben Site, Ottawa County, Ohio

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The Libben site is a Late Woodland Indian ossuary and occupation site (ca. 800-1100 A.D.) in Northern Ohio on the Portage River in Ottawa County, six miles upstream from Lake Erie. The collection of 1327 articulated skeletons from this site is particularly noteworthy because great pains were taken to retrieve the remains of all age groups from preterm infants through the aged. Lovejoy and his colleagues have reported on the paleodemography of this collection in Science. Their analysis indicated that life expectancy at birth was 20 years and that women had a consistently lower mortality than men. Floral and faunal analysis suggests that these people were predominantly hunters, gatherers and fishers. Their diet was rich in protein from fish, mammals and birds, but apparently rather low in vegetable intake.

Because of the large size and differential preservation of the Libben remains, the data were collected by two different approaches. First, several large random samples were taken in order to measure the frequencies of joint disease in the spine (249 cases), temporomandibular joints (100 cases), and shoulder and elbow (80 cases). The second approach was to select a sample of some of the more notable arthropathies (Figures 1-3). The random samples are restricted to degenerative joint disease, and the selective sample consists of such entities as septic arthritis, rheumatoid arthritis, tubercular arthritis, etc.

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Fig. 1
Young adult female with possible case of Pott's disease in the upper thoracic region.
The major findings are as follows:

1. Moderate to severe osteoarthritis of the temporomandibular joint was significantly more common in women.
2. Osteoarthritis of the lower spine was ubiquitous with advancing age.
3. Moderate to severe osteoarthritis in the shoulder and elbow was uncommon, 2.5% and 7.5%, respectively.
4. Spondylolysis occurred in 36/249 or 10.6% of all specimens examined.
5. One or two possible cases of rheumatoid arthritis were observed.
6. There were two or three possible cases of tuberculous spondylitis.
7. Four or five cases of cancerous or cancer-like conditions were found, affecting the spine and other joints.
8. Six cases of septic arthritis were seen.
9. There was one slipped femoral epiphysis and one dislocated hip joint.

In characterizing the general health of the adult Libben population, it is clear that, not only with respect to arthritic conditions, but also for all disease entities, these people were quite healthy. As one would expect, osteoarthritis is present with varying frequency in all joints, but few cases exist for other arthropathies. Nonarthritis diseases found include a possible case of Paget’s disease, 16 cases of gallstones, one case of infantile paralysis, and numerous fractures.
A working hypothesis of the adult disease patterns in this population would describe a pre-agricultural society dying primarily from acute episodes of disease and trauma. However, a recent analysis of the infants and children of the population suggests that they experienced considerable exposure to infectious disease and weanling diarrhea, which resulted in chronic skeletal responses such as porotic hyperostosis and periosteal reactions. The Libben population appears to resemble most closely modern sedentary hunter-gatherer societies in their disease patterns.

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References


