

## Paleopathology and Human Sacrifice in the Moche Culture of Ancient Peru

John W. Verano

Department of Anthropology

Tulane University, New Orleans, LA

Although archaeologists have been excavating the ceremonial centers and cemeteries of the ancient Moche since the late nineteenth century, it is only in the last twenty years that biological anthropologists and paleopathologists have conducted systematic research on the skeletal remains of the people who created one of the most impressive Pre-Columbian cultures in the Americas. We now have extensive data on the physical characteristics and skeletal pathology of the Moche, ranging from common ailments such as degenerative joint disease and dental pathology to more rare conditions such as bony tumors, and congenital malformations (Verano 1997; Verano 1990). Cultural modification of the body, in the form of cranial deformation and tattooing (seen in a small sample of mummies) has also been documented (Verano 2001a). The most recent discovery, however, is evidence of warfare and the sacrifice of prisoners. Previously only inferred from representations of combat and human sacrifice in Moche art, archaeological and paleopathological evidence of the sacrifice of captives has now been recovered from one of the most important Moche ceremonial centers, the Pyramids of Sun and Moon (Bourget 2001; Verano 2001b). Since 1995, excavations at the Pyramid of the Moon have recovered the remains of more than one hundred sacrificed captives, buried in plazas behind the pyramid. Archaeological context, as well as paleopathological analysis, has revealed how these captives were executed, as well as details of their postmortem treatment and final disposition (Verano 2001c).

### Methods and Materials

The remains of more than 100 sacrificial victims were excavated and analyzed in our field laboratory in Peru. Age and sex determinations were made to reconstruct the demographic profile of the victims, and measurements taken to reconstruct living stature, robusticity, and craniofacial features. Observations were recorded on healed fractures, fractures in the early stages of healing, and perimortem fractures and sharp force trauma associated with cause of death. Radiographs were taken of fractures and other unusual features noted during visual examination. Cut marks were cast and studied by light and scanning electron microscopy to determine the type of tools responsible for the sharp force trauma.

### Results

Age and sex determination revealed that all victims were of male sex, and ranged in age from late adolescents (ca. 15 years) to young adults, with a mean age estimate of early to mid 20s. Indications of healed, healing, and perimortem fractures, and perimortem sharp force trauma were all informative about the life history and final demise of the victims. Many well-healed fractures of the skull, ribs, scapulae, and forearm bones suggest that the victims had prior experience in combat. Fractures in the early stages of healing were found on forearm bones (most frequently, "parry" fractures of the left ulna), ribs,

scapulae, and margins of the nasal aperture, apparently marking non-lethal wounds received in battle. Massive perimortem fractures were found on some skulls, suggesting death by blunt force trauma. Cut marks were found primarily on the bodies and transverse processes of the cervical vertebrae of a majority of the victims. These cut marks correspond well with scenes of prisoner sacrifice in Moche art, which show the slashing of the throat of victims, and the collection of their blood.

Results of this study indicate the importance of integrating paleopathological research with archaeological field recovery and iconographic study. Together, these distinct sources of data can assist in reconstructing ancient events for which there is no written record.

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