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Vertebral pathologies in skeletons of Alaskan Eskimos from Golovin Bay and Nunivak Island

The primary objectives of this dissertation are to analyze vertebral pathologies by comparing two Native Alaskan skeletal collections, and assessing these results in terms of the patterning of genetically controlled versus activity related lesions. Skeletal collections housed at the Smithsonian Institution were requested for repatriation by the residents of Golovin Bay and Nunivak Island in 1993 and 1994, respectively. Prior to reburial, the remains were analyzed utilizing the Smithsonian Protocol of Skeletal Analysis (Urcid and Byrd, 1995) at the University of Alaska Fairbanks. Vertebral anomalies and pathologies observed in this study include spondylolysis, spina bifida occulta, Schmorl's nodes, osteoarthritis, transitional lumbosacral vertebrae, vertebral fusion, and fractures.

Activity related pathologies, such as Schmorl's nodes and osteoarthritis, are significantly different when the two samples are compared. No differences are observed for spina bifida occulta or transitional lumbosacral vertebrae, conditions with a genetic origin. Spondylolysis is believed to be a genetically transmitted trait (Fredrickson et al., 1984; Hensinger, 1989; Kettelkamp and Wright, 1971; Merbs, 1983; Ortner and Putschar, 1985; Stewart, 1956; Wiltse et al., 1975), but is not manifested without a triggering mechanism such as stress or fatigue. Frequencies of spondylolysis are found to be significantly higher among the individuals from Golovin Bay when compared globally to other samples, resembling frequencies observed by other researchers for skeletal collections from the Canadian Arctic and Greenland.

Vertebral health among the Golovin Bay skeletal collection is characterized as poor. The high prevalence of spondylolysis, coupled with osteoarthritis and intervertebral disc herniations, speaks of clinically significant back problems in both males and females, although not necessarily from the same causes. Individuals from Nunivak Island show slightly better vertebral health than that of Golovin. They are characterized by nearly no spondylolysis and generally less osteoarthritis. Based upon these observations it would appear that the subsistence related activities of the people of Golovin Bay took a much greater toll on the back than did the activities of those living on Nunivak Island.