Case report

A forensic case of sacralization of the sixth lumbar vertebra in skeletal remains.

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Abstract
Lumbosacral transitional vertebrae (LSTVs) are a common congenital anomaly of the spine. In the present case, we observed LSTVs in the excessive (sixth lumbar) vertebra. In forensic practice, this anomaly may be useful for personal identification of skeletal remains.

Key Words: lumbosacral transitional vertebrae (LSTVs), skeletal remains, personal identification

Introduction
Personal identification is an essential subject in forensic medicine [1,2]. Morphological characteristics such as healed fractures, bone disease, congenital defects and prosthesis provide useful information for personal identification in case of skeletal remains1-6. Here we describe lumbosacral transitional vertebrae (LSTVs), a congenital anomaly in the part of spine7, in relation to forensic skeletal remains.

Case History:
Almost completely skeletonized human remains were found in a house, where an aged person had lived alone. Anthropological findings led us to determine that the deceased was a male between 60 to 80 years of age. The stature of the victim, calculated from the length of the femoral bones, was approximately 160-165cm, and the postmortem interval was estimated at approximately 2-4 years. No dental work, healed fractures, surgical intervention or recent injuries were recognized. The skeleton had extra lumbar vertebrae and sacralization of a sixth lumbar vertebra (Type IIB) was observed in the spine as a characteristic finding (Figure 1).

Figure 1. Anterior (a) and posterior (b) views of the sacralization of the sixth lumbar vertebra in the present case.

Subsequent DNA examination using AmpFlSTR® Identifiler® PCR Amplification Kit (Applied Biosystems, USA) identified the remains as the resident of this house. His age was within the esti-

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Discussion

Personal identification was performed by DNA typing in the present case. LSTVs are common congenital anomalies, and are defined as either sacralization of the lowest lumbar segment or lumbarization of most superior sacral segment of the spine. Four types of LSTVs have been classified on the basis of morphological characteristics. The frequency of occurrence of LSTVs varies in different human population groups, and it observed in 4-24% of the general population and in 15-18.1% of the Japanese population. However, as the frequency of conversion of LSTVs into an excessive vertebra is 1.6%, its characteristic findings may be useful for personal identification. It has been previously reported that low back pain associated with LSTVs is called Bertolotti’s syndrome. Although the relationship between LSTVs and low back pain remains controversial, it has been reported that the incident of LSTVs in patient with low back pain is higher than that of the general population. The person who has low back pain seems to seek medical examination, and they may have a higher opportunity to take X-ray films of the spinal region.

Comparisons of radiological morphological features between antemortem and postmortem X-ray films have been performed for personal identification in case of skeletal remains. The morphological characteristic findings of spinal region may also provide useful information, if antemortem lumbosacral X-ray films was available in the present case.

References


