

VERTEBRAL ANATOMIC VARIATIONS IN THOROUGHbred RACEHORSES IN TRINIDAD

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ABSTRACT

The occurrence of lumbar vertebrae variants in horses in Trinidad is rarely reported. Parts of the skeletons of two horses of unknown age and sex that died in a horse farm in Trinidad and Tobago were brought to the Anatomy Laboratory. It was reported that specimens of fused left transverse processes of the 5th, and 6th lumbar vertebrae and a blunted left transverse process of the 6th lumbar vertebra in thoroughbred racehorses in Trinidad. It may be the first report of its kind in Trinidad and Tobago.

Keywords: Anatomy, Horse, Lumbar vertebrae, Variant

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1. INTRODUCTION

The vertebral column is important for weight-bearing, locomotion, and soft tissue attachment sites. The domestic horse normally has 6 lumbar vertebrae (Stecher 1962a). The transverse processes of the lumbar vertebrae are elongated and horizontally flattened for attachment with large dorsal paraspinous muscles and ventral psoas muscle group (Haussler 1999). There are no intertransverse joints at birth, but they develop soon thereafter (Stecher 1962a). The intertransverse synovial articulations are present at the lumbosacral junction and between the last two or three lumbar vertebrae in domestic horses (Townsend and Leach 1964; Sisson et al. 1975) which help in the transfer of propulsive forces from the hind limb to the vertebral column (Haussler 1999). The importance of the thoracolumbar vertebral column in orthopedic disorders is well identified and diagnostic imaging becomes more credible in equine (Veraa et al. 2016; Spoomakers et al. 2021).

2. Case Description

Part of the skeletons of two horses of unknown age and sex that died in a horse farm in Trinidad and Tobago were brought to the Anatomy Laboratory, School of Veterinary Medicine, Faculty of Medical Sciences, University of the West Indies, Trinidad and Tobago for demonstration of the axial skeleton to year I veterinary students. The skeletons were dissected, disarticulated, boiled, bleached in 3% hydrogen peroxide, and then air-dried. Photographs were taken for documentation using a Kodak digital camera. The transverse processes of the normal lumbar vertebrae were elongated, flattened, and horizontal and gave the attachment site for the epaxial and hypaxial muscles. Normally there is a pair of intertransverse synovial articulations between the 5th and 6th lumbar vertebrae; however, there were specimens of anatomical variants in which there was a fusion of the left transverse processes of the 5th and 6th lumbar vertebrae in two specimens (Fig. 1A and 1B). The left transverse process of the 6th lumbar vertebrae was peripherally blunted in one specimen (Fig. 1B).

3. DISCUSSION

Most of the intertransverse synovial articulations of the lumbar vertebrae in the horse typically occur in pairs between the left and right transverse processes of the 5th and 6th lumbar vertebrae; a similar finding was in the horse (Stecher 1962b; Townsend and Leach 1964; Haussler et al. 1997; Haussler 2018).

The stabilizing function of the intertransverse joints occurs via giving resistance against the lateral bending and axial rotation of the spine, limiting the range of the lumbar motion and helping in the transfer of propulsive forces from the pelvic limbs to the vertebral column (Stecher and Goss 1961; Townsend and Leach 1964; Haussler 2018).

The current study reported that the right intertransverse synovial articulation was present in two specimens, while there was a fusion between the left transverse processes of the 5th and 6th lumbar vertebrae (ankylosis); similar findings were reported in the horse (Stecher 1962b; Haussler et al. 1997; Collar et al. 2015; Spoomakers et al. 2021).

There is a possible relationship between the asymmetry in the intertransverse joints and asymmetry in back motion (Faber et al. 2000). The fusion of the intertransverse joints limits their movements (Townsend and Leach

1964). Intertransverse joint ankylosis is common either unilaterally or bilaterally and is probably not a significant cause of back pain but maybe for further adaptations to strain in horses (Townsend and Leach 1964; Haussler et al. 1997). The current case report showed that the left transverse process of the 6th lumbar vertebrae was peripherally blunted in one case which is similar to the finding in the horse (Collar et al. 2015).

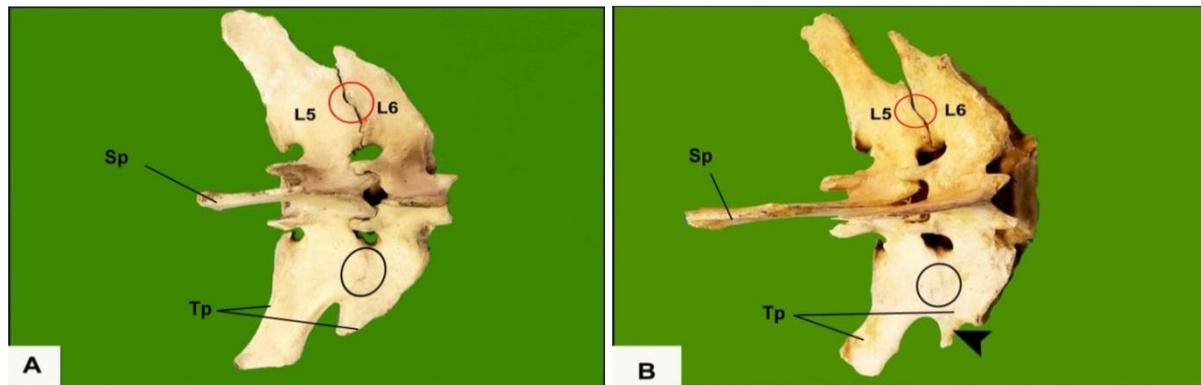


Fig. 1: A photograph showing fused left transverse processes of the L5-L6 (black oval; A and B) and a left blunted transverse process of L6 (black arrowhead). L5-5th lumbar vertebra; L6-6th lumbar vertebra; Sp-Spinous process; Tp-Transverse process; Red oval-Intertransverse joint (ITJ).

Conclusion: Knowledge of normal spinal morphology and vertebral variation is of extreme clinical importance for surgeons and radiologists for the distinction of pathologic change from normal anatomic variations.

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