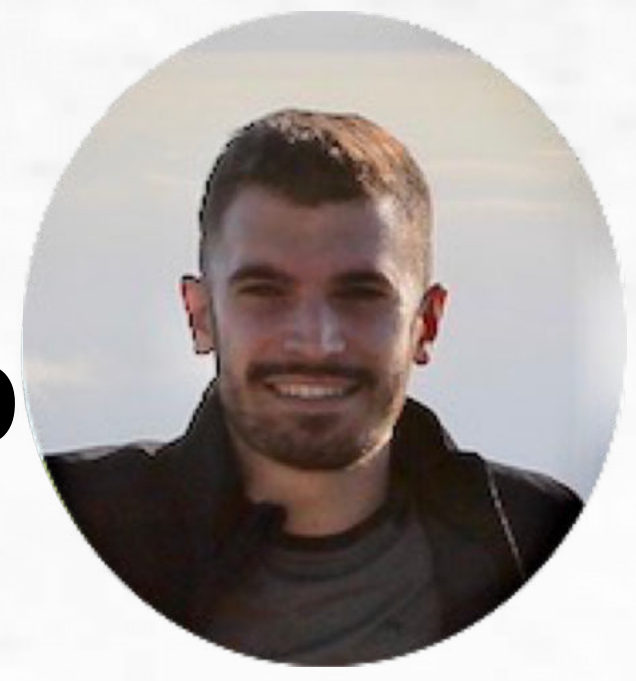


EVALUATION OF ANATOMICAL VARIATIONS OF EQUINE LUMBOSACROILIAC REGION: EX VIVO COMPARISON BETWEEN ULTRASONOGRAPHIC AND COMPUTED TOMOGRAPHIC FINDINGS AND CORRELATION WITH ABNORMAL FINDING AND CORRELATION WITH ABNORMAL FINDINGS AND POOR PERFORMANCE ON CLINICAL CASES



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INTRODUCTION

Pathological changes involving lumbosacral vertebrae and sacroiliac joints have been identified as causes of chronic poor performance in athletic horses, unilateral hindlimb lameness, gait abnormalities, back stiffness and lack of hindlimb impulsion or engagement [1].

In addition to acquired lumbosacroiliac injuries, some anatomical variations of the lumbosacral vertebrae have been described such as ankylosis of lumbar transverse processes or lumbar dorsal processes, ankylosis of facets joint, lumbosacral transitional vertebrae and varying number of lumbar and sacral vertebrae [2].

MATERIAL AND METHODS

Lumbosacroiliac spines were dissected from horses euthanized for reasons unrelated to the study. Ultrasonographic (US) examination mimicking a transrectal US examination [3] of L4-L5, L5-L6 and L6-S1 discs, intertrasversary joints (ITJ) and sacroiliac joints (SIJ) and computed tomographic examination (CT) were performed. Once removed the soft tissues, the vertebrae were disarticulated, boiled in water for around 15h to remove any remaining soft tissue. They were then boiled with water and hydrogen peroxide to whiten them and air-dried before being evaluated. A correlation of US and CT images and anatomical findings was made considering breed, age, weight and attitude of the euthanized horses.

PRELIMINARY RESULTS

Twenty-six specimens were included at this time in the study. Twelve breeds were represented: Italian Warmblood (8), Anglo Arabian (4), Italian Trotter (3), Arabian (2), Thoroughbred (2), KWPN (1), Bulgarian (1), Pony (1), Maremmano (1), Quarter Horse (1), Appaloosa (1), Lusitano (1). Mean age was 17 years and average body weight was 482 kg.

The most common US findings were heterogeneity and mineralisations within L6-S1 disc, reduced ITJs articular space, periarticular bony proliferation of the sacral or iliac wings often associated with reduced SIJ space.

Most common CT findings include heterogeneity within L6-S1 disc, periarticular ventral bony proliferation from L4 to S1, L6-S1 spondylolisthesis, reduced ITJs space with marginal sclerosis, facets joint ankylosis and/or arthropathy, ankylosis of lumbar transverse process or lumbar and sacral dorsal process, dorsal and ventral periarticular bony proliferation of the sacral or iliac wings. Anatomical dissection of the specimens allowed to better understand the diagnostic findings, performing an overall comparison of the data. So far, we also found an uncommon lumbosacral transitional vertebra consistent with an incomplete sacralisation of L6 characterized by the fusion of the left transverse process of L6 and the left sacral wing, simulating the normal ankylosis between the sacral vertebrae, as shown in Figure 1 and 2.

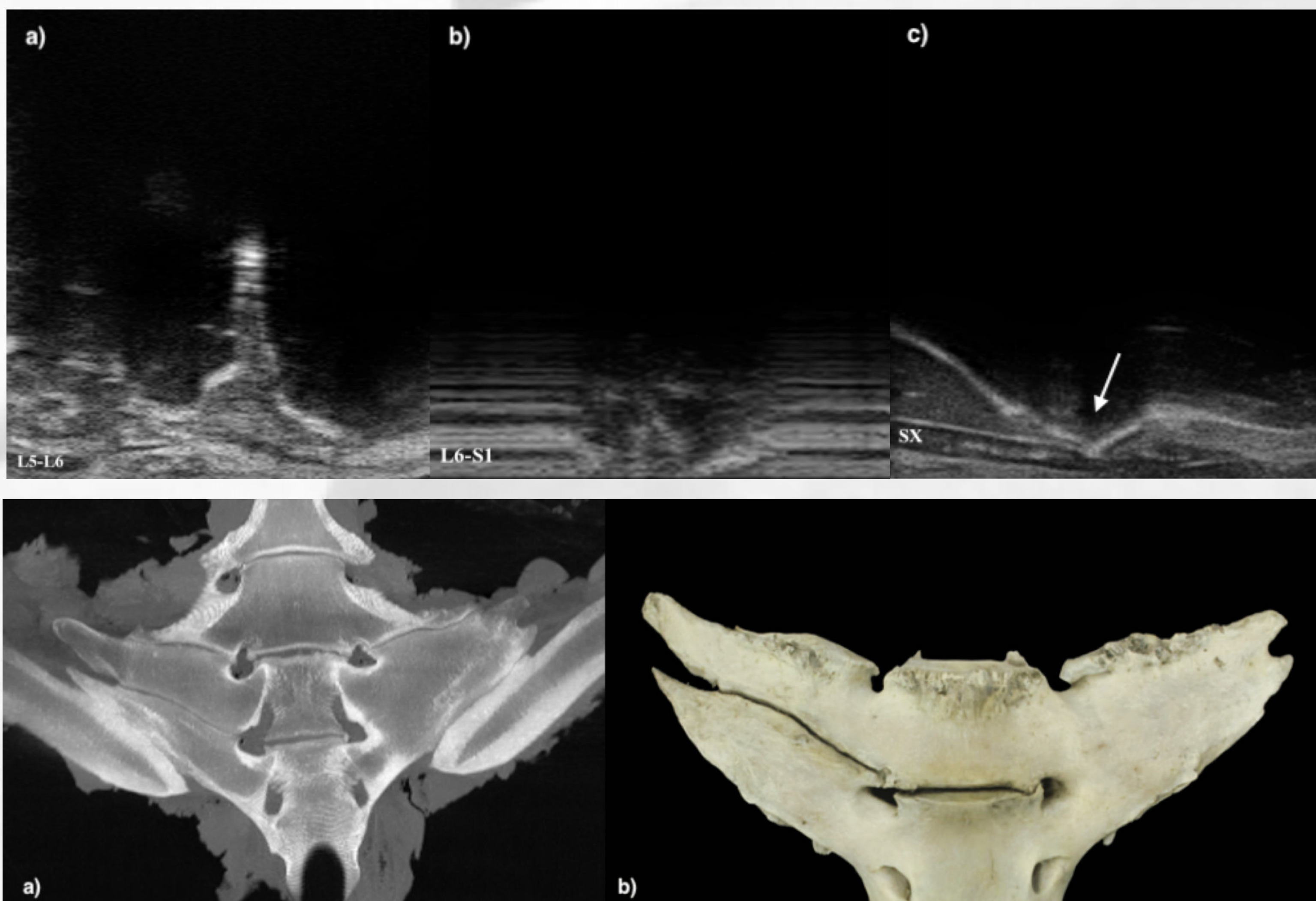


Figure 1. Ultrasonographic image of an abnormal enlarged L5-L6 disc (a) and an atypical lumbosacral disc smaller than L5-L6 disc (b).

Ultrasonographic image of a complete fusion of the left intertrasversary joint (c) with absence of joint space and echoes in depth (arrow).

Figure 2. Reformatted dorsal plane CT image (a) of a lumbosacroiliac specimen showing the fusion of the left transverse process of L6 and the left sacral wing. Ventral view of the lumbosacral transitional vertebra and sacrum (b).

CONCLUSIONS

This study highlights transrectal US examination as a valuable diagnostic tool to detect lumbosacroiliac pathologies and anatomical variations in horses. The correlation of US and CT findings with anatomical findings in ex vivo specimens has the purpose of making easier the interpretation of the clinical significance in horses with US abnormalities of the lumbosacroiliac region. However, CT examination allow us to detect some abnormalities that cannot be identified on US examination and this limit should be considered in the evaluation of a horse with back pain and poor performance.

REFERENCES

[1] Dyson S. and Murray R. Pain associated with the sacroiliac joint region: a clinical study of 74 horses. *EJV* 35: 240-245, 2003. [2] Stubbs et al. Functional anatomy of the caudal thoracolumbar and lumbosacral spine in the horse. *EJV* 36: 393-399, 2006. [3] Tallaj A. et al. Transrectal ultrasonographic examination of the sacroiliac joints of the horse: Techniques and normal images. *EVE* 32: 666-671, 2019.

