

DIAGNOSIS AND TREATMENT OF SACROILIAC DISEASE

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INTRODUCTION

Sacroiliac (SI) joint region pain is a relevant and frequently discussed topic and has been a recognised cause of lameness and poor performance in sport and leisure horses (1). Due to the anatomy of the sacroiliac joint and the mostly non-specific clinical signs, the evaluation of injury or pain affecting the sacroiliac joint remains a diagnostic challenge (2). Understanding sacroiliac joint disease requires good anatomical and biomechanical knowledge of the pelvic region and neighbouring structures. The diagnosis involves a combination of a thorough clinical examination, ideally including a ridden assessment, diagnostic local anaesthesia and the application of suitable diagnostic imaging modalities such as ultrasonography and/or scintigraphy. Although the evaluation for SI injuries in a systematic fashion can lead to satisfactory results, the majority of the possible diagnostic findings have not been measured objectively yet. In order to achieve scientifically acceptable, evidence-based information, the observations during clinical assessments and imaging findings should be repeatable and measurable. Although experienced clinicians may produce repeatable observations while accepting a degree of interobserver variability, thus far a large number of observational points regarding sacroiliac joint injuries are not measurable yet.

It is therefore advisable to have a holistic approach to diagnosis and treatment of potential SI cases. While the ideal would represent a definite diagnosis, the elimination of other differential diagnosis is currently still an important part of reaching the correct diagnosis in these cases.

ANATOMICAL CONSIDERATIONS

The sacroiliac joint is a diarthrosis with a hyaline cartilage articulation between the sacrum and the ilium dorsally and a fibrocartilage surface ventrally (3). The joint connects the pelvis and the axial skeleton translating the propulsion from the hind limbs to the spine. The joint capsule is tight and together with the sacroiliac ligaments it restricts the complex movement of the joint (3). Important neighbouring structures include the lumbosacral junction and disc, the intertransverse joints and the closely associated nerve route outlets. Furthermore, there are the dorsal and ventral sacroiliac ligaments.

PHYSICAL EXAMINATION

Although frequent findings on the static assessment of the horse may give clues to the presence of SI joint region pain, the physical features and common findings are mostly non-specific. Furthermore, the complexity of the sacroiliac joint region and the deep location makes the direct assessment or palpation of the joint impossible. Therefore, the only way to gain information regarding the functionality and pain of the joint during the physical examination is by indirect palpation. In general, there is a marked variation in the response to pain in horses. Also, the temperament is an important contributing factor. The response to tests provoking pain by pressure applied to certain points of the

pelvis varies dramatically from horse to horse. A careful and gentle approach to palpation leads more frequently to comparable results between different assessments or between horses. Common physical features of horses presenting with SI joint region pain include reduced mobility and flexibility of the thoracolumbar and lumbosacral regions. Furthermore, underdeveloped epaxial musculature of the thoracolumbar spine, with or without spasm and pain on palpation is commonly noted. Hindquarter musculature may be poor or asymmetric. Some horses are reluctant to flex or stand on one hind limb.

GAIT AND PERFORMANCE ANALYSIS

Objective gait analysis utilising either inertial sensor units or 3D motion capture has the potential to offer objective and unbiased information on the gait and has been described in a number of publications (4-8). In recent years, objective gait analysis systems have become more available commercially resulting in an increased application in routine lameness assessments in equine practice. In cases where sacroiliac joint injuries result in an asymmetry of hindlimb action in straight lines or on the lunge, these systems could add greatly to increase objectivity. Unfortunately, some horses only show overt lameness when ridden (9) and there is limited evidence for the usefulness of inertial measurement units for lameness exhibited during ridden exercise (10). SI pain is diagnosed more commonly together with concurrent lameness than on its own (1). Frequently, horses with SI disease show no overt, unilateral lameness. In these horses, visual observations regarding the head carriage, hindlimb impulsion, (canter) gait quality and willingness (on the lunge and/or during ridden exercise) are the most important signs, which have not yet been measured objectively.

Diagnostic local anaesthesia of the sacroiliac joint region is a vital part of reaching a correct diagnosis and a number of different injection techniques have been described (11-12). For diagnostic local anaesthesia, the midline approach (1) is most appropriate in the clinical scenario. Clinical signs of sacroiliac joint injury can be significantly reduced following diagnostic local anaesthesia, which is considered a useful, safe but non-specific block. The risk of inducing ataxia or weakness should be considered and discussed with the owner.

DIAGNOSTIC IMAGING AND INTERPRETATION

Ultrasonography of the sacroiliac joints is considered a useful technique and can be performed per cutem and per rectum (figure 1) (16-19). Other structures such as the lumbosacral joint, the intertransverse joints and the nerve route outlet regions can be satisfactorily assessed. Although ultrasonography of the sacroiliac and lumbosacral regions is readily available to most practitioners, limitations of viewing only a small part of the SI joint have to be considered. It is therefore important to recognise that a negative ultrasound evaluation of the SI joints does not rule out pain and injury coming from this site. In a proportion of cases with sacroiliac joint region pain confirmed by diagnostic analgesia, no significant abnormalities can be identified ultrasonographically (1).

The advanced imaging modality gamma scintigraphy offers the assessment of the sacroiliac joint when acquiring bone phase images of the pelvis. Semi-objective methods can be applied (20) to increase objectivity of image interpretation when detecting abnormal distribution of radiopharmaceutical uptake associated with the SI joint regions. Careful considerations should be given to possible factors affecting the appearance of the SI joint region, such as muscle asymmetry, radioactive urine artefacts or soft tissue attenuation (20). And although scintigraphy is considered useful to identify SI joint disease, it should be used in conjunction with other diagnostic tools looking for signs supportive of the diagnosis (21). Horses with and without sacroiliac joint region pain having a degree of overlap and a range of radionuclide uptake associated with the SI joint region should be expected. This makes a definitive diagnosis with scintigraphy alone difficult in the majority of cases.

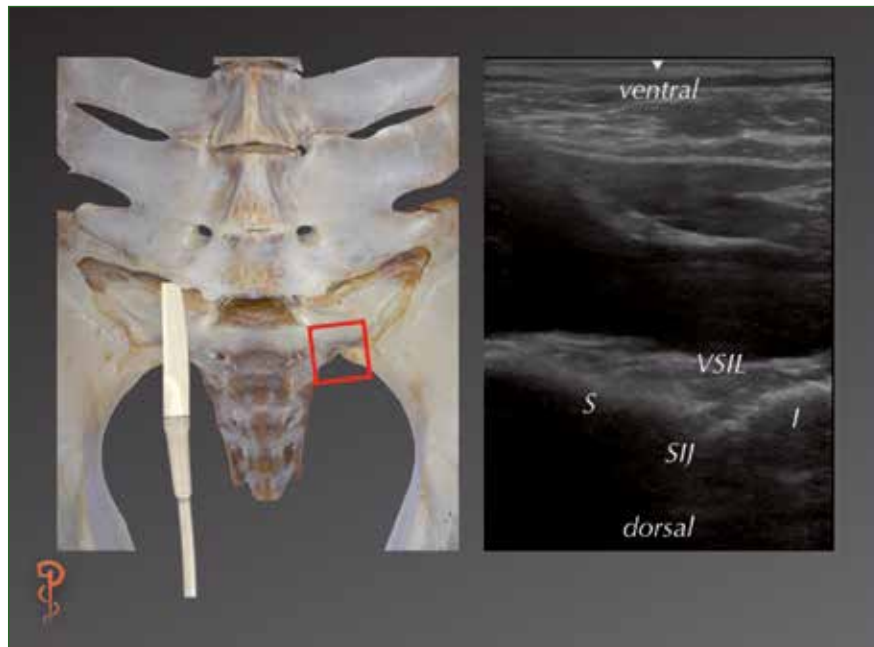


Figure 1: Left: Photograph showing a specimen of the pelvis and lumbar spine with the ultrasound probe positioned for the per rectum technique to visualise the sacroiliac joint
Right: Ultrasound image showing the sacroiliac joint in a normal horse. S=sacrum, I=Ilium, SIJ=sacroiliac joint, VSIL=ventral sacroiliac ligament.

TREATMENT

Medication of the SI region by injection can be performed in a number of ways and the different techniques have been described and categorised by various authors (11-12, 22-23). The techniques can be divided into regional infiltration and more specific periarticular

techniques to deliver medication. The use of corticosteroids such as methylprednisolone acetate or triamcinolone acetonide is most common.

Compared to regional infiltration, periarticular injection techniques involve more accurate placement of the needles utilising ultrasound guidance. They have the advantage of being more specific, more targeted and more likely to deliver medication to where it is required. The disadvantages are that they require deep injections (15-20 cm) under ultrasound guidance and this greatly increases the risk of involving important neurovascular structures, especially at the caudal aspect of the joint (sciatic nerve, cranial gluteal artery, nerve and vein). Three main techniques are described:

- 1) Cranial approach (figure 2)
- 2) Craniomedial approach
- 3) Caudal approach.

Together with a suitable exercise programme, manual therapy is also an important part of rehabilitating horses with SI region pain.

If lameness has been identified, it is important to rule out lower limb lameness, such as proximal suspensory pain prior to treating the SI region in order to achieve longer lasting results.

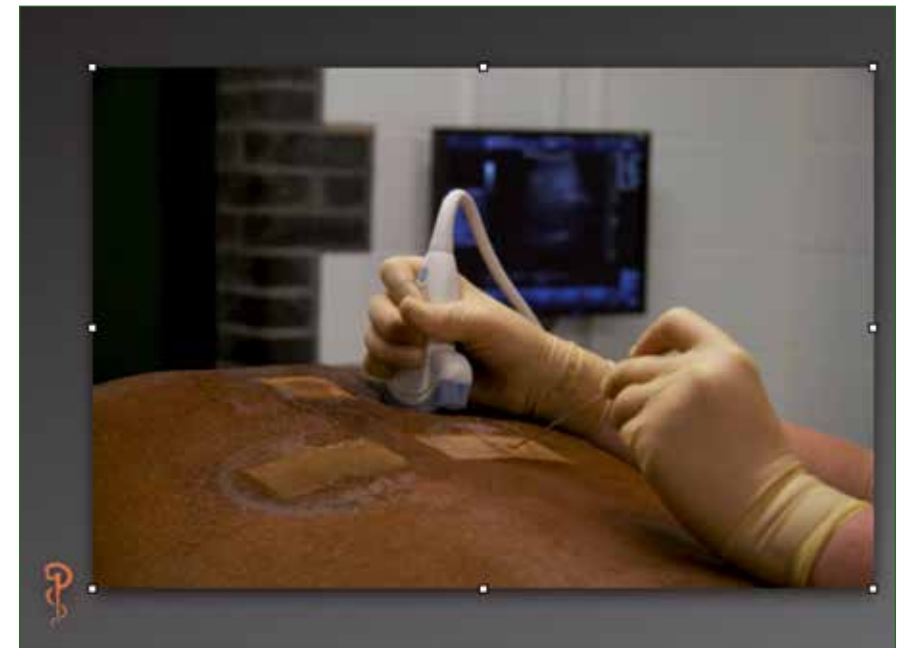


Figure 2: Photograph showing ultrasound probe and needle placement for the cranial, ultrasound-guided approach to the sacroiliac joint region.

CONCLUSION

In most cases, the objective evaluation of sacroiliac joint injuries is not yet possible. Clinical observations currently considered important to recognise when identifying horses with SI joint region pain have not been measured. There is a large variety of non-specific clinical signs thought to be associated with SI disease which makes a definitive diagnosis often difficult without applying further diagnostic tests such as diagnostic local anaesthesia. Objective gait analysis and semi-objective methods for scintigraphy image interpretation can be considered to increase the degree of objectivity. Ruling out possible differential diagnoses plays an important role in reaching a correct diagnosis.

Although SI injuries continue to represent a diagnostic challenge, increasing evidence and information provided by larger scale studies should be taken into account to ensure a more standardised and systematic approach.

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KLINISCHE SYMPTOME DER HALSWIRBELSÄULENERKRANKUNG BEIM PFERD UND DEREN RÖNTGENOLOGISCHE BEFUNDE

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In den letzten Jahren hat das Thema „Rittigkeit beim Pferd“ in der Sportmedizin vermehrt an Bedeutung gewonnen. Viele Besitzer suchen einen Pferdetierarzt auf, weil ihr Pferd sich rechts herum sehr schlecht stellen und biegen lässt. Diese Stellungs- und Biegungsprobleme werden links herum seltener beschrieben. Oft berichten die Besitzer, dass ihr Pferd geringen oder ausgeprägten Gurtzwang hat und auch der maßangefertigte Sattel nicht passt. Gelegentlich wird erwähnt, dass das Pferd die Zunge zu einer Seite, zumeist nach rechts, heraushängen lässt. Viele dieser Pferde stolpern vorne ein- oder beidseits.

In der Praxis sehen wir Pferde, die v.a. im Bereich der oberen Halswirbelsäulenmuskulatur eine gering ausgebildete Muskulatur haben, oft dehnt sich dieser Befund über die komplette Oberlinie aus. Bei der Untersuchung laufen diese Pferde nicht über den Rücken und sind sehr verspannt in ihrem Bewegungsablauf. Zudem weisen sie häufig Lahmheiten der Hinterhand auf.

Palpatorisch sind diese Pferde meist im Bereich des fünften bis siebten Halswirbels, selten auch bis zum ersten Brustwirbel schmerzhaft, meist rechts deutlich stärker als links. Oft triggert die Muskulatur bei der Palpation sehr stark. Viele dieser Pferde haben eine scheinbar normale Mobilität der Halswirbel und bestehen den so genannten Möhrentest ganz normal. Röntgenologisch ist bei diesen Patienten häufig eine Divergenz im Bereich des sechsten und siebten Halswirbels vorzufinden, d. h. der sechste Halswirbel befindet sich nicht auf einer Linie mit dem vorangehenden und darauffolgenden Halswirbel.

In der hier vorgestellten Präsentation wird ein Teil der klinischen Symptome der Halswirbelsäulen-Erkrankung beim Pferd anhand von Videos von Patienten vorgestellt und diskutiert. Im zweiten Teil der Präsentation werden Ergebnisse einer aktuellen retrospektiven Feldstudie mit doppelt verblindeter Vermessung von Divergenzen (Strecken) in Röntgenbildern der Halswirbelsäule von Pferden vorgestellt. In dieser Studie wurden 571 Pferde, die eines oder mehrere der obengenannten Symptome aufwiesen, im Bereich der unteren Halswirbelsäule röntgenologisch untersucht und ihre Röntgenbilder – soweit auswertbar – vermessen. Eine Kontrollgruppe ohne Symptome wurde mit denselben Methoden untersucht. Für Messungen zwischen dem 5. und 6. Halswirbel befanden sich 6 Pferde, für Messungen zwischen dem 6. und 7. Halswirbel befanden sich 9 Pferde in der Kontrollgruppe. Eingang in diese Studie fanden alle Warmblutpferde und Warmblut-Vollblutkreuzungen, die in dem Zeitraum von 2010 bis 2015 in der Praxis für Pferde, Dr. Ralf Pellmann, Hellwege untersucht und an der unteren Halswirbelsäule geröntgt wurden. Im Laufe der Studie wurden alle Pferde ausgeschlossen, die keinen vollständigen allgemeinen Datensatz (Rasse, Alter, Geschlecht etc.) aufwiesen.