Proceedings of the First and Second Conference on Current Veterinary Practices

Abstracts are published in Frontiers in Veterinary Science

In collaboration with:

The Conference on Current Veterinary Practices aims at bringing equine veterinarians together to discuss the latest insights in veterinary surgery, medical imaging, drug treatments, and horse care. In the present issue, we highlight state-of-the-art imaging techniques for diagnostic and therapeutic purposes. Moreover, different internal medicine aspects, innovative surgical techniques, and regenerative therapies will be covered as well. Finally, the conference will close with a panel discussion with all the speakers dealing with currently debated topics.

The conference is registered with the Order of Veterinarians (NGROD), and therefore, study points will be acquired. Registration is free. Supported by an educational grant from GST-ANACURA, Evergem, Belgium.

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First Conference on Current Veterinary Practices:
Where: Equitom Equine Hospital, Venusbergstraat 1, 3560 Meldert-Lummen, Belgium
When: 5th of March 2016
Time: 9:30 am to 3:00 pm

Second Conference on Current Veterinary Practices:
Where: GST-ANACURA, Noorwegenstraat 4, 9940 Evergem, Belgium
When: 26th of March 2016
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First Conference on Current Veterinary Practices: Tom Mariën, Equitom Equine Hospital, Meldert-Lummen, Belgium

Second Conference on Current Veterinary Practices: Jan H. Spaas, Global Stem cell Technology (GST) - part of ANACURA, Evergem, Belgium

SPEAKERS:

First Conference on Current Veterinary Practices:

Marieke Zimmerman
Tom Mariën
Jan H. Spaas
Edouard Adriaensen

Second Conference on Current Veterinary Practices:

Marieke Zimmerman
Emmanuelle Van Erck
Martin A. Vidal
Tresemiek Picavet

The First Conference on Current Veterinary Practices, 5th of March, 2016, Meldert-Lummen, Belgium

Interactive talk and discussion on CT of cervical region in the horse

Marieke Zimmerman

Head Medical Imaging, Equine Diagnostic Centre, Venusbergstraat 1, 3560 Meldert-Lummen, Belgium

Abstract

Cervical spine pathology is a common condition in horses. It occurs in horses of all ages and all disciplines. A wide variety of symptoms can be seen, such as ataxia, neck stiffness, forelimb lameness, poor performance, and reluctance to work.

Diagnostic imaging of the cervical spine in horses was previously limited to radiography, nuclear scintigraphy, and ultrasonographic examination. Due to the size of the horse, CT and MRI of the cervical spine were limited to the cranial part of the neck. However, more recently, we have been able to perform CT examination of the cervical spine up to C7–T1 in Warmblood horses. This examination is performed under general anaesthesia.

CT delivers a detailed 3D image of the osseous structures of the cervical spine. Moreover, it allows us to identify sites of osteoarthritis of the articular process joints, fragmentation of the articular processes, potential nerve root impingement, malalignment of the vertebrae, osseous cysts, etc. Thanks to CT myelography, sites of spinal cord compression can be visualized in a more detailed way in comparison to conventional myelography.

In conclusion, CT provides an accurate diagnosis of pathologies in the cervical region of horses, resulting in an optimized treatment, prognosis, and surgical planning.

Keywords: veterinary, medical imaging, CT, cervical, equine

Author Biography

Marieke Zimmerman graduated in 2008 from the Faculty of Veterinary Medicine, Ghent University. Then, she completed a 1-year rotating internship at the Ecole Nationale Vétérinaire de Maisons-Alfort and in the CIRALE headed by Prof. Jean-Marie Denoix. Afterwards, she performed a second internship, focused on the orthopedic and medical imaging in the horse in the Animal Health Trust in Newmarket, led by Dr. Sue Dyson.

From 2010 to 2013, she worked at Practice Dr. Suls in The Netherlands, where she has focussed on orthopedics and medical imaging. In 2013 and 2014, Marieke further specialized in MRI, CT, and scintigraphy in horses by visiting UC Davis, Washington State University, Colorado State University, and the Ecole Nationale Vétérinaire de Lyon. Since 2014, she has been working at Equine Diagnostic Centre (EDC), where she is responsible for MRI, CT, and nuclear scintigraphy.

Interactive talk and discussion on latest techniques in veterinary surgery

Tom Mariën

Head of Surgery, Equitom Equine Hospital, Venusbergstraat 1, 3560 Meldert-Lummen, Belgium

Abstract

Significant advances in Equine Head Surgery have been made in the last years. However, radiographic and ultrasonographic examinations provide insufficient information in major head pathologies. On the other hand, the use of CT-scan images allows more accurate visualization and even 3D imaging of head pathologies. This information is of great help for the surgeon not only to decide if a surgical intervention is possible but also to plan and prepare complex head surgeries.

In this regard, different important pathologies will be discussed, such as soft tissue cysts, osteosarcoma of the orbit, maxillary squamous cell carcinoma, infection of the temporomandibular joint, and complex ectopic teeth in the sinus. Indeed, the clinical signs, diagnostic imaging, differential diagnosis, treatment, and outcome will be presented of all these cases. The main goal of this talk is to assist the equine practitioner to recognize and identify different head pathologies in an early stage, so that even life-threatening pathologies can be managed with a positive outcome.

Keywords: veterinary, surgery, head, equine

Author Biography

Tom began his career at the University of Ghent, where he started veterinary medicine training at the age of 18 and finished 6 years later with honors. He worked for 1 year as an assistant at the Department of Surgery from the same University. Tom decided to specialize in surgery and moved to the USA (Kentucky, Ohio, San Francisco) to be trained by renowned surgeons. He developed several new surgical techniques that have been published in recognized veterinary journals (such as closing the spleen–kidney area and reducing internal inguinal rings). He has been invited to speak at several international conferences and wrote several books chapters on equine surgery. In 2000, Tom returned to Belgium and opened his own clinic: Equitom. This clinic has been recently renewed and expanded to include CT, MRI, and scintigraphy.

The next generation of stem cell therapy: "From cartilage explants to arthritic patients"

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Abstract

Background: In horses, 60% of lameness is correlated with osteoarthritis, which is considered a major economic loss for this industry. Because of promising results in several human and equine clinical trials during the past few years, the clinical use of regenerative therapies for the treatment of osteoarthritis is becoming increasingly relevant.

Materials and methods: Peripheral blood (PB)-derived mesenchymal stem cells (MSCs) were isolated and characterized from three donor horses. Chondrogenic induction was performed, and MSC markers and changes in mRNA and protein expression were analysed at early and late time points after isolation. In a subsequent organ culture study, a total of 180 stifle cartilage explants of 6 horses were included and standardized lesions were created. Uninduced and chondrogenic-induced MSCs were used for the treatment of these lesions in two different doses and evaluated at three time points (day 1, 5, and 14). Lesions, cartilage regeneration, and cell integration were blindly scored. Finally, uninduced MSCs were compared with chondrogenic-induced MSCs for the treatment of osteoarthritis in 165 horses. Return to work was evaluated at 6 and 18 weeks after treatment.

Results: Isolated cells possessed all the properties to be characterized as MSCs. Cartilage genes ($p = 0.0182$ and $p = 0.0351$) demonstrated a significantly increased expression after chondrogenic induction and CD29, CD44, CD90, CD45, MHC II, and a monocyte/macrophage marker remained constant over time and after induction. Adherent MSCs could be observed on the surface in 92.6% of the unloaded explants and in 40.7% cleft filling was present. Significantly, more cartilage explants demonstrated cleft filling ($p = 0.0022$) and adhered MSCs ($p = 0.0161$) in the low dose group. Clump formation occurred in 39% of the uninduced MSC-treated cartilage explants and detached before day 14, whereas no clumps were present in the chondrogenic-induced MSC-treated groups ($p = 0.0156$) demonstrating a more homogenous adhesion and integration on the cartilage. At 6 weeks after treatment with uninduced MSCs, 45% of the patients returned to work, whereas 60% of the horses treated with chondrogenic-induced MSCs did so. The number of patients returning to work increased up to 18 weeks with 78% in the uninduced MSC-treated group and 86% in the chondrogenic-induced MSC-treated group. With the odds ratio of 1.47 for short-term and 1.24 for long-term, higher average scores could be demonstrated using chondrogenic-induced MSCs as compared to uninduced MSCs for all three lower limb joints.

Conclusion: Our results indicate that chondrogenic induction was successful and generated better results in explant cultures as well as in patients with naturally occurring osteoarthritis.

Keywords: veterinary, stem cells, equine, cartilage, arthrosis

Author Biography

Jan H. Spaas graduated as a Master in Veterinary Medicine from the Faculty of Veterinary Medicine, Ghent University (Belgium) and won the price for young authors of the Flemish Veterinary Journal in 2010. He completed his PhD in Veterinary Science about stem cell isolation and characterization at the Department of Comparative Physiology and Biometrics of the same Veterinary Faculty. In 2012, he became the laboratory director of Global Stem Cell Technology (GST); and in 2015, he was appointed head R&D of the stem cell platform within the ANACURA group located in Evergem, Belgium.

He has published over 20 internationally peer-reviewed scientific publications and is an inventor of 6 patents concerning stem cell cultivation techniques in mammals. From 2013, he became part of the International Society for Cellular Therapy (ISCT) and the European Society of Gene and Cell Therapy (ESGCT). He is industrial promotor of PhD and master students who actively participate in the company's research program. In 2015, he was appointed as an Associate Editor for the Veterinary Regenerative Medicine section of Frontiers in Veterinary Science.

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Disclosure Statement

The author, JHS, declares competing financial interests as shareholder and employee in Global Stem Cell Technology (GST). JHS is an inventor of several pending patents owned by GST (BE2012/0656; WO2014053418A9; WO2014053420A1; PCT/EP2013/075782). The content of this abstract contains a product under development owned by GST.

Interactive talk and discussion on orthopedic cases

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Abstract

Pathologies of the locomotor system are one of the most common causes of poor performance in the equine athlete. In many cases, the area of pathology is localised by an adequate clinical examination and subsequently visualized by radiographic and/or ultrasonographic examination. However, in some cases, the area of pathology cannot be localised or the pathology cannot be clearly visualized with the conventional imaging techniques. In those cases, the clinician will require more advanced diagnostic imaging modalities, such as MRI, CT, or nuclear scintigraphy to come to a definitive diagnosis. Three of these orthopaedic cases will be discussed.

Keywords: veterinary, orthopedics, CT, MRI, equine

Author Biography

Edouard Adriaensen graduated as Master in Veterinary Medicine in 2011. He completed a 1-year internship in Clinique Vétérinaire Equine in Normandy, France. Moreover, he worked as an independent assistant for one year in another clinic in Normandy, France. From 2013 until 2015, he functioned as equine orthopedic veterinarian in Veterinary Practice Dr. Suls, The Netherlands. In 2015, he became Head of Orthopedics in Equitom Equine Hospital, Belgium.

The Second Conference on Current Veterinary Practices, 26th of March 2016, Evergem, Belgium

Interactive talk and discussion on CT and MRI of the proximal suspensory ligament

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Abstract

Proximal suspensory ligament injuries are a common cause of fore- and hindlimb lameness in sports horses. However, diagnostic imaging of proximal suspensory ligament desmitis can be challenging. Ultrasonographic examination is complicated by the presence of fat and muscle tissue in the suspensory ligament. Additionally, in many cases, suspensory ligament desmitis is associated with bone pathology at the origin of the ligament. Radiographic examination of the proximal third metacarpal/metatarsal bone can give us some information but will often underestimate the severity of bone pathology. MRI or CT examination gives us a detailed 3D image of the origin of the suspensory ligament and is therefore very helpful for the diagnosis of suspensory ligament pathology.

MRI of the origin of the suspensory ligament provides us with a detailed image of the suspensory ligament and the bony structures. MRI is the only modality that allows us to visualise bone oedema of the palmar/plantar aspect of the third metacarpal/metatarsal bone. It gives us a detailed image of the soft tissues, and the fat and muscle fibres can be distinguished from the fibrous part of the suspensory ligament. However, standing low-field MRI can be challenging due to movement artefact and, especially in hindlimbs, lack of patient compliance.

CT of the origin of the suspensory ligament gives us a very detailed image of the bony structures, and especially osteophytes and small fragments are better visualised with CT compared to standing MRI. Contrast CT is performed to better visualise the soft tissues. Omnipaque is injected intra-arterial before and during the entire length of the CT scan. This allows us to differentiate between normal fat and muscle tissue, and a lesion. CT of the origin of the suspensory ligament is performed under general anaesthesia.

When comparing both techniques, MRI has the advantage of being able to visualise bone oedema and it allows in theory a better visualisation of the soft tissues; however, image quality is often impaired by motion artefact, especially in hind legs. CT is better for depicting the osseous borders, and as there is no movement artefact, contrast CT is often more sensitive for the diagnosis of mild soft tissue lesions.

Keywords: veterinary, suspensory ligament, CT, MRI, medical imaging, equine

Author Biography

Marieke Zimmerman graduated in 2008 from the Faculty of Veterinary Medicine, Ghent University. Then, she completed a 1-year rotating internship at the Ecole Nationale Vétérinaire de Maisons-Alfort and in the CIRALE headed by Prof. Jean-Marie Denoix. Afterwards, she performed a second internship, focused on the orthopedic and medical imaging in the horse in the Animal Health Trust in Newmarket, led by Dr. Sue Dyson.

From 2010 to 2013, she worked at Practice Dr. Suls in The Netherlands, where she has focussed on orthopedics and medical imaging. In 2013 and 2014, Marieke further specialized in MRI, CT, and scintigraphy in horses by visiting UC Davis, Washington State University, Colorado State University, and the Ecole Nationale Vétérinaire de Lyon. Since 2014, she has been working at Equine Diagnostic Centre (EDC), where she is responsible for MRI, CT, and nuclear scintigraphy.

The revolution of overground respiratory videoendoscopy in exercising horses

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Abstract

Whatever the equestrian discipline, age, or breed, the respiratory system represents the main limiting factor to exercise in the healthy horse. Respiratory diseases are the second most common cause of wastage in sport horses and racehorses. The upper airways (UA) are involved in the high prevalence of respiratory problems as a cause of poor performances. The advent of overground endoscopes has revolutionized our diagnosis of UA disorders in practice: we can now recreate "real-life" conditions and observe UA function in situations similar to work or competition. We can also account for important factors that interfere with upper airway stability or patency during work, such as rider, equitation, and tack.

Whatever the clinical signs of UA dysfunction we observe during exercise, these are linked to a primary cause: identifying that underlying cause is of paramount importance to propose an adapted treatment be it medical or surgical. Missing the proper diagnosis inevitably leads to poor therapeutic success rate.

A few elements of physiology

To provide the lowest resistance due to inertance, friction, and turbulence, the horse's upper airway should ideally have been be short, large, straight, and rigid. However, they are long, narrowed in some critical areas, such as the larynx, bended and compliant in others, such as the pharynx. The pharyngeal and laryngeal sections of the UA are made of soft tissue and only sustained by muscles or mobile cartilages, making them highly susceptible to dynamic collapse when submitted to important transmural pressures, such as those physiologically encountered during exercise.

Any abnormality that would reduce the airway section would be a potential factor of impaired ventilation and consequently impaired performance. Complex obstructions, where more than one structure collapses into the airway, or combinations of upper and lower airway disorders occur frequently. Multiple abnormalities will more commonly be associated with significant gas exchange impairment than single disorders.

Dynamic UA obstruction is a common cause of respiratory noise during exercise and may lead to poor performance in equine athletes. The noise generated by an obstruction in the airway, be it functionally disabling or not, is often of concern to the horse's rider, can be judged as deleterious in competition and decrease the commercial value of the horse.

Reduction or sub-obstructions of the UA are mainly caused by functional, inflammatory, or infectious problems.

Diagnosis of UA problems

A clinical exam of the UA requires a thorough evaluation of the entire horse. Any UA disorder can be associated with other clinical problems, such as orthopedic issues, lower airway diseases, or even cardiac problems. Observation of the horse in usual working conditions is of paramount importance if the horse is involved in racing or sports. This allows to elicit symptoms that would remain unobservable at rest (respiratory noise, defensive behavior, cough, etc.). In some cases of UA obstruction, the horse can fight against the riders aids, become nervous and difficult to handle, and these can be the only apparent symptoms as UA is not necessarily associated with noise.

Videoendoscopy during exercise is considered to be the "gold standard" for making a definitive diagnosis of dynamic upper airway collapse in horses, where findings at rest are frequently unreliable or absent. Although the grading of laryngeal function at rest can help to predict the degree of laryngeal obstruction observed during exercise, cases relating to palatal instability, dorsal displacement of the soft palate or pharyngeal collapse do not correlate with resting observations.

Exercising endoscopy was traditionally performed on a high-speed treadmill. The recent advent of overground endoscopes has allowed the evaluation of upper airway mechanical behavior in normal exercising conditions. The technique has already been used to evaluate racehorses at the track, as well as ridden sport horses. Ridden examination is of particular importance, as equitation-related maneuvers or movements are a factor in the development of dynamic airway instability. Head flexion has been recognized as a factor contributing to the decrease of laryngeal diameter and the subsequent increase in UA resistance. Rider equitation and head flexion have a combined effects on upper airway morphology and aggravate UA dynamic obstruction.

It is important to note that whilst videoendoscopy enables visualisation of any dynamic airway collapse, it does not enable us to directly quantify the functional effects of an obstruction. Inclusion of a videoendoscopy to a simple standardized exercise test can be a means of evaluating the impact of the UA problem.

The predisposing factors to equine UA disorders

Horses are particularly prone to develop dynamic upper airway collapse because they are obligate nasal breathers. They cannot avoid the high negative pressures associated with nasal breathing and switch to oral breathing, as other species do during exercise. The equine UA are highly collapsible, especially in the nasopharyngeal region, which is not supported by osseous or cartilagenous structures. The nasopharynx relies solely on local muscular activity to maintain stability and patency. The dramatic variations in airway flow and transmural pressures that are encountered during intense exertion promote instability and potential secondary dynamic obstruction of the UA.

Not all UA obstructive conditions have the same impact on respiratory function, but they commonly create an increase in respiratory resistance, which may result in either reduced airflow or an increase in the trans-upper airway pressures required to maintain airflow. This increase in airway resistance will lead to an increase in respiratory workload, and where airflow is reduced the resulting hypoventilation may lead to decreased oxygen consumption, increased blood lactate concentration, and exacerbation of arterial hypoxaemia and hypercapnia.

Certainly, a number of factors are implicated in the development of dynamic UA collapse in an individual horse. In many cases, it is linked to the type of exercise and its intensity, with many forms of UA collapse only occurring during strenuous work: inspiratory pressures become more negative as speed increases, fatigue of the respiratory musculature may also play a role. Hence, the type of exercise test performed will have an impact on the ability to make a definitive diagnosis of dynamic UA collapse, and it is necessary to recreate the work effort encountered in those circumstances. This may involve asking the usual rider to perform the test, make the horse go over jumps, or run next to other horses.

Other equitation factors may also be implicated in the development of dynamic UA collapse. These factors are particularly important in pleasure or sport horses, where dynamic airway collapse appears to commonly occur at lower exercise intensities than in racehorses. We found that pharyngeal collapse was more readily diagnosed in warmbloods during overground endoscopy compared with treadmill endoscopy. This is likely due to the fact that riding factors, including increased tension in the reins and head flexion, are frequently an important predisposing factor in the development of dynamic airway collapse these horses. Changes in poll flexion are easier to recreate during ridden exercise, although it is possible to induce changes in place the head in a flexed position during treadmill exercise.

Changes in head and neck position have a significant effect on pharyngeal diameter, with the smallest diameter found when in a dorsal flexed position. Correspondingly, increased poll flexion leads to an increase in respiratory resistance and inspiratory pressures and results in decreased inspiratory flows. In addition, the flexed position increases the compliance of the upper airway walls and promotes the bulging of soft tissues within the upper airways. Upper airway instability is markedly affected by equitation and rider interaction. In a recent study, we looked at the effects of riding and head flexion on upper airway function, 90 and 81% of the horses developed or showed an aggravation in the severity of upper airway obstructive disorders with head flexion and rider intervention, respectively. In dressage horses, usually worked with a more acute head–neck angle, head flexion, and riding had a more significant influence on the development of upper airway obstruction than in showjumpers [positive predictive value (PPV) for head flexion = 86 vs. 65%; PPV for other riding maneuvers = 83 vs. 57%]. There was a significant association between rider intervention and exercising with increased head flexion for the detection of all dynamic upper airway obstructive conditions, except dorsal displacement of the soft palate (DDSP). However, it was recently reported that DDSP in racing Standardbreds could occur in association with the driver grabbing a strong hold of the lines.

Underlying airway inflammation has been suggested as a possible etiology or predisposing factor to UA obstruction. Pharyngeal instability, under the form of palatal instability or nasopharyngeal collapse, was significantly affected by the presence of upper (pharyngeal) or lower airway inflammation. The pathophysiology of nasopharyngeal collapse is not fully understood but has been associated with neuromuscular dysfunction of the upper airways. Inflammatory conditions such as pharyngeal lymphoid hyperplasia could result in nasopharyngeal instability and possibly displacement of the soft palate.

Pharyngeal collapse has been reported that it is most commonly associated with blood gas abnormalities in racehorses, either when occurring in isolation or in combination with other forms of UA collapse. In Warmblood showjumpers or dressage horses, nasopharyngeal instability has been associated with decrease in performances. The pathophysiology of DDSP, palatal instability, and of other forms of nasopharyngeal collapse, although not fully elucidated, is generally believed to involve neuromuscular dysfunction of the upper airways. The integrity of the nerves and muscles involved in maintaining UA stability should be systematically assessed. This includes evaluating presence of infection or inflammation in the UA, including guttural pouches and lower airways, as well as any mechanical element (internal or external) that could interfere with correct UA function.

Use of specific tack needs to be discussed and eventually tested with the rider. Changing the bit or allowing the horse to work in a different position is helpful to evaluate the underlying mechanisms behind the UA disorder. Pain is also an important element to evaluate. Pain can induce changes in behaviour and breathing pattern and promote changes in UA stability.

Keywords: veterinary, internal medicine, respiratory, endoscopy, equine

Author Biography

Emmanuelle graduated in 1996 from the French Veterinary School of Maisons-Alfort. She obtained a PhD on respiratory function testing in horses at the University of Liège (Belgium). After working 2 years in internal medicine at the equine clinic at the veterinary school of Lyon (France), she returned to the Equine Sports Medicine Centre in Liège in 2000. She was specialized in the investigation of performance and poor performance in equine athletes of all disciplines, from racing Thoroughbreds to elite endurance horses. From 2006, she contributed to develop the equine sports medicine unit in the CIRALE in Normandy (France) where she consulted as senior clinician. In January 2010, she developed her own ambulatory referral practice "Equine Sports Medicine Practice," in Belgium. ESMP offers specialized service in equine internal and sports medicine throughout Europe. The Royal Belgian Federation of Equestrian Sports has appointed her as team veterinarian in 2015.

Emmanuelle is a diplomate of the European College of Equine Internal Medicine (ECEIM) and a veterinary expert for the FEI. She is author or coauthor of over 50 peer-reviewed scientific articles and regularly lectures at international conferences. She was awarded the BEVA Trust Peter D Rossdale Open Award for her paper entitled "Dynamic respiratory videoendoscopy in ridden sport horses: effect of head flexion, riding and airway inflammation in 129 cases," published in Equine Veterinary Journal, 2011.

Regional limb perfusion of the equine distal limb with stem cells: lessons learned from *in vivo* tracking of Tc99m-HMPAO labeled cells

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Abstract

The presented work is based on a body of literature published by the School of Veterinary Medicine at the University of California-Davis. The work has attempted to evaluate the technique of regional limb perfusion (RLP) of mesenchymal stem cells (MSC) in the equine lower limb. Published evidence shows that intra-vascular perfusion of stem cells can promote tissue healing through cell homing to injured sites. Therefore, local cell perfusion could be very relevant in the equine foot where intra-lesional injection is challenging and many soft tissue injuries in the equine foot carry a poor prognosis. Initial work documented that both intra-arterial (IA) and intra-venous (IV) RLP of the distal limb using a pneumatic tourniquet result in MSC persistence in perfused tissues, whereby IA perfusion showed more reliable cell distribution to the pastern and foot area.

A time-dependent accumulation of MSCs was identified with IA RLP, which also showed better distribution and uptake than the IV RLP. However, a tourniquet for IA perfusion produced arterial thrombosis and is therefore unsuitable for clinical use. Comparing IA injection through the median artery without a tourniquet and IV RLP performed through the lateral palmar digital vein are both safe and reliable methods for the administration of MSCs to the equine foot in the anesthetized patient. However, IV RLP performed in the standing horse was less efficient than when performed under general anesthesia. In contrast, the IA technique showed better distribution (under GA) and is therefore clinically preferred. Also, intra-arterial injection of MSC at the level of the median artery can be performed in standing horses to distribute MSCs to the equine foot, and therefore, this is currently the preferred stem cell perfusion technique in horses.

Keywords: veterinary, stem cells, distribution, perfusion, technetium, equine

Author Biography

Dr. Martin Vidal, BVSc, MS, PhD, started his horse career as a teenager on the racetrack in Munich and is today an equine veterinary specialist double-boarded by the American Colleges of Veterinary Equine Surgery as well as Sport Medicine and Rehabilitation. Dr. Vidal is also one of the pioneers in the area of stem cell research and its therapeutic application.

Dr. Vidal began his undergraduate and graduate education at the University of Wisconsin and then completed his veterinary training in 2000 at the University of Liverpool. Dr. Vidal started his career in a British private practice, the Minster Equine Veterinary Clinic and in Australia where he completed his internship at the Goulburn Valley Equine Hospital. During his internship, Dr. Vidal frequently treated injured horses with bone marrow transfers, an early form of equine regenerative therapy for tendon and ligament injuries. This experience motivated Dr. Vidal to pursue further post-graduate work in stem cell biology at Louisiana State University, where he also completed his residency in equine surgery.

Dr. Vidal was among the first to publish on equine stem cell research and in 2004, he worked with the LSU veterinary clinical faculty to establish one of the first university-based stem cell services in the country. Dr. Vidal's work was awarded by the American Association of Veterinary Clinicians and the Grayson-Jockey Club Research Foundation, Inc., and eventually recognized by the University California-Davis Veterinary Medical Hospital, which extended Dr. Vidal a faculty position to advance their own efforts in stem cell therapy. Through his clinical and research work at UC Davis from 2008 to 2014, Dr. Vidal and his colleagues helped to advance the understanding of equine stem cell biology and application methods of regenerative therapy for tendon and ligament injuries in the horse. Dr. Vidal has frequently presented on equine regenerative medicine at national and international scientific and veterinary conferences as well as in varying equestrian communities and has published in both equine and human research journals.

Dr. Vidal draws on his academic background as well as his deep passion for the horse to work with his clients to find the most effective treatments and rehabilitation programs. Dr. Vidal's primary clinical interests focus on equine sport medicine and surgery and, in particular, lameness evaluation, imaging, and equine orthopedic diseases. His surgical emphasis lies in orthopedic, minimally invasive as well as upper respiratory procedures.

Dr. Vidal serves on the Veterinary and Research Committees of the American Endurance Ride Chapter (AERC) and is an FEI veterinarian for the endurance discipline. He resides in the Rio Verde area of North Scottsdale with his family and loves to train Karate and play polo.

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Drs. Mark C. Rick, Sabine Buechler, Alamo Pintado Medical Center, Los Olivos, CA, USA

Interactive talk and discussion on inflammatory bowel disease in a young eventing horse

Tresemiek Picavet

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Abstract

Chronic inflammatory bowel diseases (CIBD) are a group of proliferative or inflammatory disorders characterized by dysfunction of the gastrointestinal tract due to infiltration of the mucosa and submucosa with eosinophils, lymphocytes, plasma cells, macrophages, or basophils. Possible diseases associated with malabsorption and maldigestion are alimentary lymphosarcoma (AL), granulomatous enterocolitis (GE), eosinophilic enterocolitis (EE), lymphocytic-plasmacytic enteritis (LPE), multisystemic eosinophilic epitheliotropic disease (MEED), and proliferative enteropathy (PE) of largely unknown pathogenesis.

The principal clinical signs are weight loss and poor condition. Also, other clinical signs, such as depression, poor appetite, ventral edema, mild intermittent abdominal pain, diarrhea, occasional fever, and skin lesions, are reported. Although more commonly CIBD affects the small intestine, it can also involve the large intestine. Clinical signs are related to malabsorption and maldigestion, leading to hypoproteinemia, dependent edema, weight loss, mild recurrent colic, and soft feces or diarrhea (when the colon is involved). Thickened loops of intestine can be palpated on rectal palpation, or observed with transabdominal ultrasonographic examination. Lymphadenopathy may also be detected. An oral glucose absorption test can confirm malabsorption. The confirmatory diagnosis is provided by intestinal biopsy histology. Rectal biopsy may be diagnostic in 50% of cases. Duodenal mucosal biopsy may be obtained *via* gastroduodenoscopy, left flank laparatomy/laparascopy, or exploratory laparatomy. To date, no single pathogen has been implicated as the cause of CIBD in horses.

Treatment of CIBD is aimed at decreasing the horse's exposure to dietary, parasitic or environmental allergens, coupled with immunosuppression. Chemotherapeutic agents have been tried in a few cases of CIBD or lymphosarcoma without success, probably because of the advanced stage of the disease when treatment was started. Long-term corticosteroid therapy may be useful but often requires to be lifelong. Resection of oedematous, hemorrhagic, or necrotic segments is an option in localized forms of CIBD. If other parts of the intestine are not involved, long-term outcome may be favorable. In CIBD with extended involvement of the gastro-intestinal tract, euthanasia is often performed. The prognosis is guarded. A case of CIBD in a young sport horse will be discussed.

Keywords: veterinary, internal medicine, CIBD, inflammation, equine

Author Biography

Tresemiek Picavet graduated in 1984 with high honors from the Faculty of Veterinary Medicine, Ghent University. She performed lameness examinations and studied equine medical imaging and bovine surgery at the Surgery Department of the same Faculty of Veterinary Medicine for 1 year. Between 1985 and 1991, Tresemiek worked for 6 years at the Department of Large Animal Internal Medicine of Ghent University. Her job mainly consisted of clinical work as well as practical and theoretical education, and scientific research.

From 1991 to 2013, she worked as a horse internist in a private clinic, where she was also responsible for anesthesia. Since 2014, she works as an independent horse internist for DBP Veterinary Services with mobile equipment, such as ultrasound, gastroscopy, endoscopy, and radiography, for additional diagnostic testing (including RX thorax, BAL, liver and kidney biopsies) to run for colleague horse veterinarians in the Benelux, Germany, and France.

Since 2004, Tresemiek became a specialist at The European College of Equine Internal Medicine (ECEIM), where she is currently part of the Education and Credentials Committee. Tresemiek is chairman of the Wetenschappelijke Vereniging Gezondheid Paard (WVGP = Scientific Association of Horse Health). In October 2014, she was appointed for a period of 3 years as an academic consultant for the Department of Internal Medicine and Clinical Biology of Large Animals at the Veterinary Faculty, Ghent University.

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