Evaluation of the automated haematology analyser Mythic 18 Vet compared to the ADVIA 120 use in dogs and cats

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INTRODUCTION

The Mythic 18 Vet Haematology Analyser is a recent point-of-care analyser available to the general practitioner. It uses impedance technology to provide a complete blood cell count as well as a differential of white blood cells into granulocytes, lymphocytes and monocytes. Initially designed for human blood, specific settings have been developed for feline, canine and other species blood samples. The aim of the current study was to validate the use of the Mythic 18 analyser in cats and dogs by comparing it with the ADVIA 120.

MATERIALS AND METHODS

The study included fresh (less than 6 hours) EDTA-blood samples from 40 dogs and 40 cats taken during routine clinical investigations. These samples were analysed with the Mythic 18 and the reference method, confirmed by microscopic blood smear evaluation. The Advia 120 was used as the reference method. Precision of the analyser was determined by multiple

analyses (12 consecutive times) on samples from each species as well as quality control material from the reference method. Statistical analyses were performed using Pearson's correlation, Passing and Bablok linear regression and Bland Altman Difference plots. The inherent imprecision of both methods was used as criteria of acceptance ().

RESULTS

The Mythic 18 showed good to excellent precision for the complete blood count parameters in dogs and cats with a coefficient of variation inferior to 4% for most of the parameters. Pearson's rank correlation coefficient for red blood cell parameters, total white blood cell count and platelets revealed a very good to excellent correlation in dogs, and a good to excellent correlation in cats. Absolute granulocyte counts correlated excellently for both cats and dogs whereas lymphocyte and monocyte counts correlated poorly. Haemoglobin was underestimated in both cats and dogs, due to a proportional error. Apart from lymphocytes and monocytes, biases were overall either minor or not clinically significant. The Mythic 18 was found to be user-friendly and easy to operate, with a short time learning curve.

CONCLUSION

Overall, the Mythic performed very well for red blood cell parameters and total white blood cell counts in dogs and cats. While absolute granulocyte counts are reliable, it is not the case for monocyte and lymphocyte counts. A blood smear evaluation is highly recommended for assessment of platelets and white blood cell differentiation.

Cryptorchidectomy by single incision laparoscopy surgery in two dogs

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INTRODUCTION

Cryptorchidism is the most common congenital testes' defect in dogs (reported prevalence: 10% of adult dogs), being usually a unilateral condition with the right testicle more frequently affected. A video-laparoscopic technique has been described for castration of dogs with abdominally retained testicles. Laparoendoscopic Single-Site (LESS) surgery and Laparoscopic approaches have many benefits compared to conventional open surgery: less postoperative pain, smaller incisions and faster recovery.

OBJECTIVE

To report cryptorchidectomy performed through LESS approach, using a single commercial device.

METHODS

Two male dogs (a 1-year-3-months old, 19 kg. Border Collie, and a 2-years-6-months old, 24 kg. Belgian Shepherd) arrived to the consultation with one descended testicle. The Border Collie also presented an umbilical hernia. Ultrasound examination confirmed the location of the abdominal testicle. In the first case, the surgery started with a small skin incision placed just in the umbilical hernia in order to resolve it in the same intervention. In the second case, the incision was made caudal to the umbilical wound. There, the single port device was introduced. Insufflation of pneumoperitoneum was initiated and established at an intra-abdominal pressure of 10 mm Hg. Then, an endoscopic bipolar cut/coagulation sealing device for hemostasis, a 5 mm grasper and a 5 mm 30° laparoscope were used to facilitate the approach. The surgeon used a 5 mm bipolar sealing device and a 5 mm grasper for dissection and vascular sealing of the testicle pedicle. All instruments were introduced through the same single port device. The testicle was extracted through the single port. Afterwards, total extraction of testicle tissue was confirmed.

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RESULTS

For the first dog, the duration of both procedures (umbilical hernia repair and removal of the cryptorchid testicle) was 22 minutes and the skin incision was 2.0 cm length. For the second dog, procedure duration and skin incision length were 18 minutes and 2.5 cm, respectively. During the post-operative period no lesions, haemorrhages, signs of pain or other surgical complications were observed.

CONCLUSIONS

The cryptorchidectomy performed by LESS through the commercial device is a feasible, safe and effective approach in dogs. The first case presented the ideal indication for the single port use, using the same incision for both procedures. LESS presents itself as an alternative to conventional laparoscopy in dogs with the additional advantage of only one incision, providing easy and secure organ retrieval.

A report of 2 cases of sialoceles in the cat

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The history, physical examination findings, laboratory test results, treatment, follow up and outcome of 2 cats with

sialoceles were reported. Both cats were admitted with a painless fluctuant cervical swelling and in one cat a sublingual sialocele was also present. Needle aspiration of the swellings showed a viscid fluid and cytology of the aspirates was consistent with the presence of saliva. A diagnosis of sialocele was made. Both cats were treated by sialadenectomy of the mandibular and sublingual gland complex. In case 2 marsupialization of the sublingual sialocele was also done. The histopathological examination of the excised tissues in one cat was compatible with chronic inflammation of the mandibular and sublingual gland. Both cats are in good health after a mean follow up time of 13 months.

Removal of the mandibular and sublingual salivary gland complex along with marsupialization of the ranula provided a successful outcome and no relapses were detected.

Development of canine adipose stem cell lines for the allogeneic treatment of osteoarticular diseases

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MATERIAL AND METHODS

After isolation from 2–10g of tissue, the canine adipose stem cells (cASCs) were selected according to their plastic adhesion properties and then cultured in flasks at 37°C and 5% CO₂. The adherent cells were then expanded for further functional and phenotypic characterization. The phenotypic characterization was performed by flow cytometry using monoclonal antibodies and the functional characterization was performed by adipogenic, osteogenic and chondrogenic differentiation assays.

RESULTS

This study demonstrates that our *in vitro* expansion protocol provided a high yield of expansion being useful for subsequent clinical trials. Moreover, the phenotypic characterization showed a high purity of the cell population after 3–4 passages. The markers expression profile was the typical for MSCs. Finally, the functional characterization showed an adequate ability of differentiation into different cellular lineages. All these results suggest that the cell lines obtained using our expansion protocol are suitable and appropriate for both experimental and clinical purposes.

CONCLUSIONS

These well-characterized cASCs constitute a potential therapeutic tool for the development of new strategies concerning the application of stem cell therapy in osteoarticular affections in the dog, and they will be applied initially in osteoarthritic patients, as the immuno-privileged and immuno-regulatory capabilities of MSCs enhance their therapeutic potential not only in autologous but also allogeneic recipients.

INTRODUCTION

In the recent years, stem cells have shown a great potential for the development of new and promising therapeutic strategies. Concretely, mesenchymal stem cells have an important therapeutic application in the treatment of numerous diseases. In clinical veterinary medicine, stem cells are most commonly used in therapeutic applications for the treatment of musculoskeletal injuries in horses and dog, specially tendonitis and osteoarthritis. In osteoarthritis, stem cell therapy offers a promising therapeutic option, since although current methods for articular cartilage defects are promising no treatment has resulted in complete restoration of the hyaline cartilage and the subchondral bone.

AIM

To isolate and characterize canine mesenchymal stem cells from the adipose tissue for their application in veterinary clinical settings.

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