Relevance of Myelography in Diagnosis of Subarachnoid Hematoma in a Rottweiler with Traumatic Cervical Subluxation – Case Report

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Abstract

Traumatic luxation or subluxation of the cervical vertebrae can cause unstable spinal injuries, such trauma has the potential to disrupt the subarachnoid blood vessel and produce hematoma that will compress the spinal cord. Being located in the soft tissue of the marrow that hematoma will be impossible to examine through conventional radiography.

A 1 year, Rottweiler dog was brought for radiography examination presenting neck pain and tetra paresis. Radiographic exposures were done in lateral and dorso-ventral recumbency to examine the cervical vertebrae. Cervical myelography was done using contrast agent Optiray 350 (Ioversol, manufactured by Mallinckrodt Pharmaceuticals), 0,5 ml/kg. The contrast agent was injected in the cervical area in occipito-athloidian space.

Conventional radiography shows a normal aspect of the cervical vertebrae without any sign of fractures. It was observed a narrowing of the space between occipital and atlas. Puncture of the cervical area of the spine show no cerebrospinal fluid. Injection of the contrast agent was done easily. Myelography was performed at intervals of 2 minutes. Myelography revealed a filling defect in the dorsal part of the marrow caudally of the atlas that corresponded to a hematoma.

Myelography is useful in determining the filling defects due to blood clot formation on the marrow after a posttraumatic event.

Keywords: cervical luxation, dog, myelography, subarachnoid hematoma

INTRODUCTION

Traumatic luxation or subluxation of the cervical vertebrae can cause unstable spinal injuries, such trauma has the potential to disrupt the subarachnoid blood vessel and produce hematoma that will compress the spinal cord (Kinns *et al.*, 2004). Being located in the soft tissue of the marrow that hematoma will be impossible to examine through conventional radiography. Because of the immediate neurological consequences subarachnoid hematoma should be located as soon as possible, for surgical procedure

to be applied if necessary (Duval *et al.*, 1996). Myelography is an easy, sensitive and quick method to diagnostic spinal cord compression especially if other methods such as CT or MRI are not available (Hara *et al.*, 1994; McKee *et al.*, 2000; Barone *et al.*, 2002).

AIMS AND OBJECTIVES

The aim of this case report was to highlight the feeling defects due to subarachnoid hematoma using the myelography as a quick method of diagnostic.

MATERIALS AND METHODS

A 1 year, Rottweiler female dog was brought for radiography, clinical examination presented neck pain, neck stiffness and tetra paresis, which indicate a cervical posttraumatic injury.

Radiographic exposures were done in a lateral and dorso-ventral recumbency to examine the cervical vertebrae in order to remove the suspicion of cervical fracture or luxation. On the radiographies the normal aspect and alignment of the cervical vertebrae was visible without displacement or fractures of the vertebral body (fig 1, fig 2).

The dog was prepared for cervical spinal puncture, the cervical area was trim and disinfected and the dog was subjected to anesthesia with Propofol 2% (Fresenius Kabi Deutschland GMBH - Germany) administered i.v. until the effects appear. The cervical puncture was performed using spinal needle of 20G (fig. 3, fig. 4).

Cervical myelography was done using contrast agent Optiray 350 (Ioversol, manufactured by Mallinckrodt Pharmaceuticals), 0,5 ml/kg. The contrast agent was injected in the cervical area in occipito-athloidian space. After the contrast agent administration, radiography was performed.

Fig. 1 Lateral exposure of the cervical region, 90 kV, 25 mAs

Fig. 2 Dorso-ventral exposure of the cervical vertebrae, 93 kV, 32 mAs

Fig. 3 Position of the head during cervical pucture

Fig. 4 Cervical pucture

RESULTS AND DISCUSSION

Puncture of the cervical area of the spine show a small quantity of cerebrospinal fluid of normal aspect.

Conventional radiography shows a normal aspect of the cervical vertebrae without any sign of fractures or luxation, being observed only a slight narrowing of the space between occipital and atlas.

Injection of the contrast agent was done easily. Myelography was performed at intervals of 2 minutes. Myelography revealed a filling defect in the dorsal part of the marrow caudally of the atlas that corresponded to a hematoma. The contrast agent diffuses both in the cranium highlighting the aspect of the central nervous system but also in the cervical area.

On latero-lateral exposure the filling defect was of 17.79 mm in length (fig. 5, fig. 6).

Dorso-ventral exposure show another filling defect situated at the C_3 , which corresponded to a second subarachnoid hematoma, this one couldn't be highlighted on latero-lateral exposure. The size of hematomas in dorso-ventral exposure is of 14.26mm/31.52mm and 9.27mm/13.45mm for the second one (fig. 7, fig. 8).

After the radiological diagnostic the dog was put on proper medication, the symptoms disappearing in approximately 2 weeks.

CONCLUSION

Myelography is useful in determining the filling defects due to blood clot formation on the marrow after a posttraumatic event. A correct diagnostic prevent unnecessary time delay or an unrequired surgery, through myelography can be highlight the filling defect produced by hematoma or disk protrusion, the vet being able to identify the correct place in case of an intervention.

Fig. 5 Highlighting the post contrast aspect of the central nervous system and the filling defect (white arrow)

Fig. 6 Position and dimension of the subarachnoid hematoma

Fig. 7 Dorso-ventral exposure, 90 kV, 25 mAs

Fig. 8 Size and position of filling defects in dorso-ventral exposure

REFERENCES

1. Duval J, Dewey C, Roberts R, Aron D (1996). Spinal cord swelling as a myelographic indicator of prognosis: *a retrospective study in dogs with intervertebral disc disease and loss of deep pain proprioception*. Vet Surg, 25:6–12.
2. Kinns J, Mai W, Seiler G, Zwingenberger A, Johnson V, Cáceres A, Valdés-Martínez A, Schwarz T (2004). Radiographic sensitivity and negative predictive value for acute canine spinal trauma, Veterinary Radiology & Ultrasound, Volume 47, Issue 6, p. 563–570.
3. Hara Y, Tagawa M, Ejima H (1994). Usefulness of computed tomography after myelography for surgery on dogs with cervical intervertebral disc protrusion. *J Vet Med Sci*, 56:791–794.
4. McKee WM, Penderis J, Dennis R. (2000). Obstruction of contrast medium flow during cervical myelography. *Vet Radiol Ultrasound*, 41:342–343.
5. Barone G, Ziemer LS, Schofer FS, Steinberg SA. (2002). Risk factors associated with development of seizures after use of iohexol for myelography in dogs: *182 cases (1998)*. J Am Vet Med Assoc, 220:1499–1502.