

Case Report

A RARE CASE IN A DOG OF INTRAORBITAL FOREIGN BODY WITH LATE SIGNS OF CORNEA PENETRATION - PRESENTING INITIALLY AS ANTERIOR UVEITIS

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Abstract

An unusual case is presented of an unsuspected orbital metallic foreign body (sewing needle) in a dog. The skin entrance wound injury was undetected during two clinical examinations, likely due to the quick skin healing and punctiform nature of the wound in the skin/muscles/orbit. The most unusual characteristic of this case is the cause of the wound. The metallic foreign body could have penetrated the cornea through an oblique limbal/scleral pathway at the moment of injury, leaving no obvious signs of corneal injury in the first clinical examination. Secondly, the corneal injury perhaps occurred due to the dog rubbing its head on the floor between the initial examination and the first follow-up examination after seven days. At first, the case presented as anterior uveitis with an unknown cause. Due to quick scar formation of wounds in dogs and the fact that punctiform wounds can be difficult to detect, an orbital foreign body was not initially suspected. However, seven days afterwards, a new sign of triangular limbus-based corneal opacification appeared. This led to suspicion of a previous corneal injury and the nearby (orbital) presence of a foreign body. This diagnosis was

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confirmed by radiography and the intraorbital sewing needle was extracted by surgery. Lack of sophisticated techniques did not prevent an adequate diagnosis and an excellent surgical outcome.

Key Words: anterior uveitis, corneal penetration, foreign body, intraorbital

CASE PRESENTATION

A seven-year-old male Maltese dog was examined in our clinic when the owner complained of two weeks of painful red eye in their dog. In our first examination, there was blepharospasm, red eye, with a cloudy cornea (corneal oedema). On touching the eyelids, the dog showed unequivocal signs of pain by backwards movements of its head and growling every time the eyeball was touched indirectly through the eyelids. Pupillary reaction to a Finoff transilluminator light showed an incomplete and slower than normal response. Anterior segment examination was performed with the aid of a 20D indirect ophthalmoscopy loupe with a direct ophthalmoscope as the light source as well as a binocular 4 diopter surgical loupe. There was ciliary injection with a fibrinous patchy deposit over the temporal third of anterior lens capsule, its visible part within the 8 mm pupil from the border, inwards about 2 mm. The crystalline lens was mostly transparent with 3-4 minor opacities located paracentrally within a 4-5 mm pupil; the opacities were visible in green reflex and could be interpreted as minor congenital opacities. The vitreous part was transparent. There were no signs of retinal pathology using direct ophthalmoscopy.

Accordingly, serofibrinous anterior uveitis was diagnosed and empirical therapy with Atropine solution 1% once a day, Maxidex (0.1% Dexamethasone solution) qid and Floxal (Ofloxacin 0.3% solution) qid.

At the first follow-up examination after seven days, the fibrinous deposit on the anterior lens capsule was no longer present, and ciliary injection was significantly less intense than in the first examination. However, a new finding of a triangular opacity in the cornea, stretching from a base at the limbus to the apex about 4 mm centripetally, was now visible. In the region of the opacity, there was also thickening of the cornea that was interpreted, due to the observation period, as corneal oedema or corneal oedema with slight infiltration rather than fibrosis (Kuhn et al. 2002; Lavaud et al. 2019; Marchegiani et al. 2017; MacKay et al. 2013).

Although there was no obvious entrance wound at the limbus or sclera (conjunctiva), at this stage of the follow-up examination, it was suspected that a palpebral/orbital foreign body could exist that, once it entered the cornea, induced a late onset infiltration, or that a mobile foreign body was lodged in the eyelid/orbit. Such a foreign body could have once or intermittently moved inwards by the pressure exerted on the eyelid/orbit by the dog rubbing its head on the carpet/floor, which the owner noticed in the period between the clinical examinations (Kuhn et al. 2002; Fischer et al. 2018; Betbeze et al. 2015).

At both the initial and the follow up examination an IOP of 24.4 mm Hg was measured by Shiotz tonometer.

Due to difficulties in positioning and holding the patient, a single profile/latero-lateral radiograph with suboptimal positioning of the patient was obtained (Fig. 1). At that time, the position of the corneal opacity indicated it had occurred due to corneal injury through the limbus of the adjacent sclera, while the position of the metallic foreign body was difficult to discern. However, using latero-lateral head radiography, we determined a suitable position for surgery to extract the object (Fig. 2).

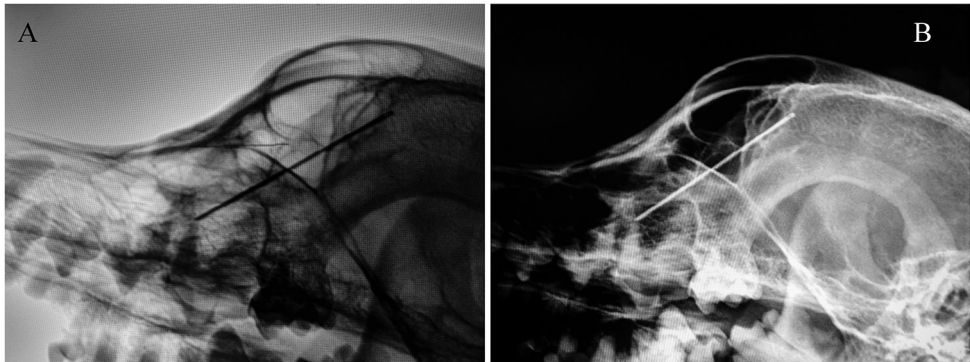


Figure 1 (A-B). Diagnostic finding of the foreign body, a sewing needle

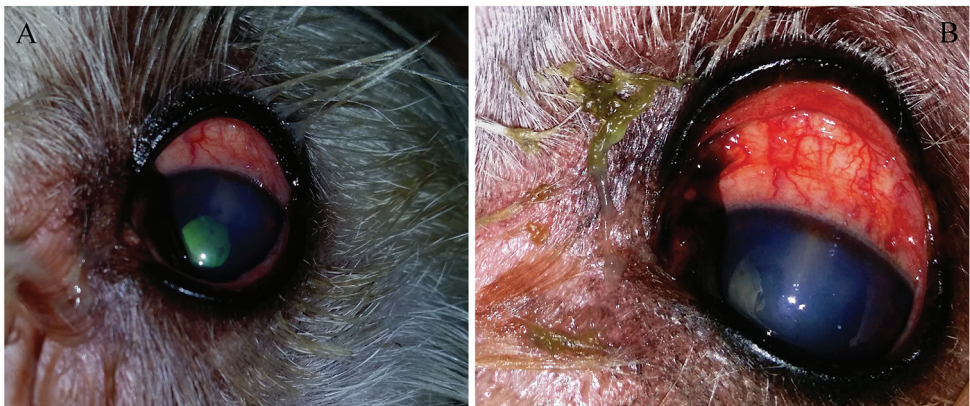


Figure 2 (A-B). Eye inspection. Conjunctival and ciliary hyperemia, with noticeable corneal oedema and the metallic foreign body showing

A cut through the skin of the skull and frontoscutularis muscle and orbit, 2 cm wide, 4 cm from the orbital rim was performed. The surgeon was then able to approximate the position of the foreign body with the aid of a metallic probe and finger tip palpation (Vallefuoco et al. 2014; Rose et al. 2018.; McDonald et al. 2015.; Betbeze et al. 2015.). Afterwards, the wound was submined with scissors and forceps and the foreign body partially visualized (Fig. 3). The visible part had a metallic reflection and resembled a

sewing needle. This was then extracted with the aid of a needle holder, and the wound sutured by muscle and skin sutures (Vicryl/polyglactic acid 5.0).



Figure 3 (A-D). Surgical instrumental extraction of the metallic foreign body

There were no perioperative complications and the wound had healed well at the second follow-up examination after surgery at seven days post-operation when the sutures were removed. There was no ciliary injection, and no signs of inflammation in the anterior chamber were visible. A scar on the triangular infiltration/oedema site in the cornea had turned into scar tissue (macula/leucoma), and the pupil reacted sluggishly but more swiftly than at the pre-operative examinations. At the third post-operative examination, one month afterwards, pupillary reaction to light was near normal, although still slower than in the other eye.

DISCUSSION

Due to the lack of sophisticated examination equipment, the absence of anamnestic data reporting injury and the unexpected findings of corneal infiltration/oedema at the first follow-up examination after treatment for anterior uveitis had been commenced, there was still no unequivocal opinion on what could be the reason for the new findings of late corneal oedema.

The possibility of injury as a causative factor had to be confronted, with a chance of it being late onset (at least in terms of overt signs of disease) keratitis, probably with low-virulence pathogens. The first signs of this could have gone unnoticed during the first examination. A focal contusion injury to the cornea producing such a focal oedema was highly improbable, primarily due to the position and extent of the oedema.

Therefore, there were two most probable scenarios as causes for the late corneal oedema finding. Firstly, an unnoticed oblique corneal/limbal/scleral wound could be present with late, low-grade consecutive keratitis or quick scar formation. Secondly, in between the first two clinical examinations, a mobile foreign body that was possibly present within the orbit could have been pushed through the cornea/limbus/sclera obliquely and finished up in the cornea, due to the noticeable head rubbing by the dog (Ryane et al. 2019; McDonald et al. 2015; Barbé et al. 2015).

CONCLUSION

A rather unusual case is presented of an unsuspected orbital foreign body in a dog, which firstly raised the suspicion of being an anterior uveitis of unknown origin. The subsequent first follow-up examination revealed a new finding of localized corneal oedema/infiltration/scar with no epithelial defect or obvious entrance wound in the cornea/limbus/ sclera/skin (Rose et al. 2018; Fische et al. 2018).

If the mechanism was indeed late injury to the cornea as opposed to undiagnosed corneal injury at first examination, to the best of our knowledge such a case has never been reported before. However, even in the case of late, obvious consequences of minor undetected corneal injury, it is worth, we suspect, reporting such a rare case of unsuspected orbital foreign body with minor, initially undetectable corneal injury as the only clue to the presence of a foreign body in the adnexal structure/orbit (Lavaud et al. 2019).

The fast scar tissue formation after punctiform injury of skin in dogs, and the fact that a thin sewing needle that obliquely penetrated the sclera/limbus/cornea could have formed a completely or partially self-sealing channel with no detectable minor subconjunctival infiltration seem to be the only feasible explanations for the fact that no obvious entrance injury to the outer eye was detected at any examination.

In a more general context, and based on literature on injuries in animals as opposed to humans, our case exemplifies the difficulties of lack of anamnestic data and the

bizzare mechanism and timing of corneal injury from this unsuspected metallic foreign body (sewing needle) in the orbit (Lavaud et al.; Rose et al. 2018.; Fische et al. 2018; Fischer et al. 2018.; Marchegiani et al. 2017). It also shows that even given a lack of highly sophisticated diagnostic and surgical equipment, an adequate diagnosis and excellent surgical skill can lead to a good outcome for a patient with this rare type of problem.

Authors contributions

HMM conceived of the presented idea and wrote the manuscript with support from PB, MP and VJ. PB anesthetized animals. PS gave substantial advices related to surgical approaches. RN and HMI were involved in drafting the manuscript

Competing interests

The authors declare that they have no competing interests.

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RETKI SLUČAJ INTRAORBITALNOG STRANOG TELA SA ZNACIMA PENETRACIJE ROŽNJAČE, KOJI SU U POČETKU UKAZIVALI NA ANTERIORNI UVEITIS

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Kratak sadržaj

Neobičan slučaj neočekivanog metalnog stranog tela u orbiti psa, prisutnog kao posledica punktififormne povrede na koži iglom koja nije uočena usled brzog zarastanja i kretanja kroz kožu, mišiće i orbitu. Najneobičnija karakteristika ovog slučaja je strano telo (šivaća igla) koje je penetriralo rožnjaču prolazeći kroz limbus i beonjaču pod kosim uglom, a u momentu povređivanja, kao i na prvom pregledu nije bilo znakova koji bi ukazivali na to ili je povreda rožnjače nastala češanjem glave o pod između prvog i drugog pregleda u razmaku od sedam dana. Na početku, slučaj je izgledao kao anteriorni uveitis nepoznatog uzroka i sedam dana kasnije se pojavilo trouglasto zamućenje rožnjače sa bazom prema limbusu što nas je dovelo u sumnju da je prethodna povreda rožnjače povezana sa orbitalnim stranim telom. Usled brzog zarastanja rana i formiranja ožiljka kod pasa i nedovoljno jasnih kliničkih znakova punktififormnih rana orbitalno strano telo nije bilo očekivano. Penetrantna rana na rožnjači je mogla nastati pre prvog pregleda ili u vremenu između prvog i drugog pregleda trljanjem glave.

Nedostatak sofisticirane tehnike ne sprečava postavljanje tačne dijagnoze i primene adekvatne hirurgije.

Ključne reči: anteriorni uveitis, perforacija rožnjače, strano telo, intraorbitalno