MRI findings in a cat with diffuse cerebellitis

A 3.5-year-old female neutered indoor Burmese cat presented with a 1-day history of hyporexia, lethargy, tremors and ataxia. Neurological examination findings included a pronounced cerebellar ataxia (hypermetria of all limbs), titubation, a wide-based stance, repeated rhythmic contractions of the facial muscles including the eyelids, intention tremor and inconsistent bilateral menace response (Video S1). The neuroanatomical localisation was the cerebellum. Haematology revealed a mild neutrophilia [11.81×10^9/L, reference interval (RI): 2.30 to 10.29×10^9/L]. Serum biochemistry (including plasma ammonia concentration) was within normal limits. Feline immunodeficiency and feline leukaemia virus serology enzyme-linked immunosorbent assay was negative. Thoracic radiographs and abdominal ultrasound were unremarkable. Magnetic resonance imaging (MRI) (Intera 1.5 T, Philips Healthcare, Amsterdam, Netherlands) of the head demonstrated a diffuse T2-weighted and fluid attenuated inversion recovery (FLAIR) hyperintensity of the cerebellar grey matter with marked contrast enhancement (Fig 1). Cerebellomedullary cisternal cerebrospinal fluid analysis revealed increased total protein concentration (0.34 g/L, RI: <0.25 g/L) and a mixed cell pleocytosis (total nucleated cell count: 33 cells/μL, RI: <5 cells/μL) with 45% neutrophils, 39% monocytes, 14% macrophages, 1% lymphocytes and 1% eosinophils.

Differential diagnoses included immune-mediated cerebellitis, atypical corticosteroid responsive tremor syndrome and infectious disease (*e.g.* bacterial, fungal, protozoal). Infectious disease testing was submitted but subsequently cancelled due to financial constraints. Treatment with oral prednisolone (1 mg/kg PO q24h) and clindamycin (20 mg/kg PO q12h) was started. Gradual improvement was noticed and clindamycin was discontinued after 7 days given the low suspicion for infectious disease in an indoor cat with no travel history. Prednisolone was continued at 1 mg/kg PO q24h for 4 weeks and then was progressively tapered over a 4-month period. One month after hospital discharge, the cat was mildly hypermetric with a subtle intention tremor and at 2 months was neurologically normal. A presumptive diagnosis of cerebellitis of unknown aetiology was made. However, the prompt and sustained improvement with steroid therapy, and the lack of deterioration after discontinuing clindamycin, would support an immune-mediated diagnosis.

Cerebellitis is uncommon in cats but has been reported as a focal lesion or part of multifocal disease in meningoencephalitis of unknown aetiology, otogenic bacterial meningoencephalitis, feline infectious peritonitis, cryptococcosis, phaeohyphomycosis and toxoplasmosis. This case demonstrates a rare pattern of diffuse cerebellitis predominantly affecting the grey matter in a cat with unique MRI features that have not been described in the veterinary literature to date.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.
Video S1. Clinical semiology of a cat with diffuse cerebellitis.

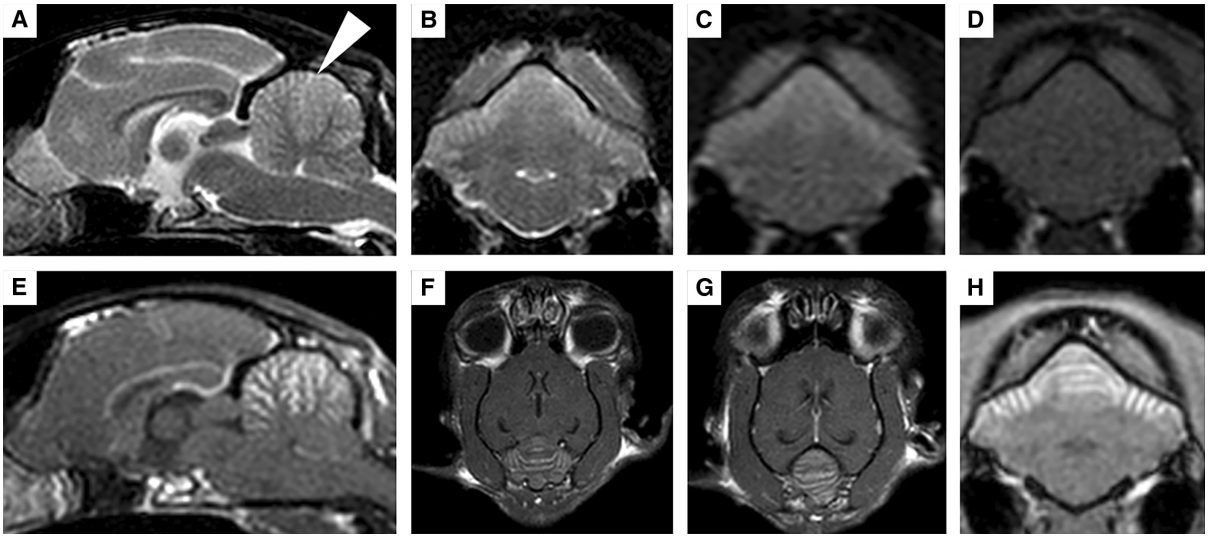

FIG 1. Magnetic resonance imaging of the brain of a cat diagnosed with diffuse cerebellitis. Sagittal T2-weighted (T2W) image of the brain (A), transverse T2W (B), fluid attenuation inversion recovery (FLAIR) (C), T1-weighted (T1W) pre-contrast images (D) at the level of the cerebellar nuclei. Post-contrast sagittal T1W (E), dorsal T1W (at the level of the mid vermis) (F), dorsal T1W (at the level of the dorsal vermis) (G) and T1W transverse (H) images. There is diffuse T2W and FLAIR hyperintensity of cerebellar grey matter with a reduction in definition of the cerebellar sulci and reduced differentiation between grey and white matter (most pronounced in the declive, arrowhead in A). Marked diffuse contrast enhancement of the cerebellar grey matter is seen (E to H), distinctively sparing the underlying white matter. All hyperintensities are reported relative to normal grey matter

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