



Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

Case #: 46 Month: July Year: 2014

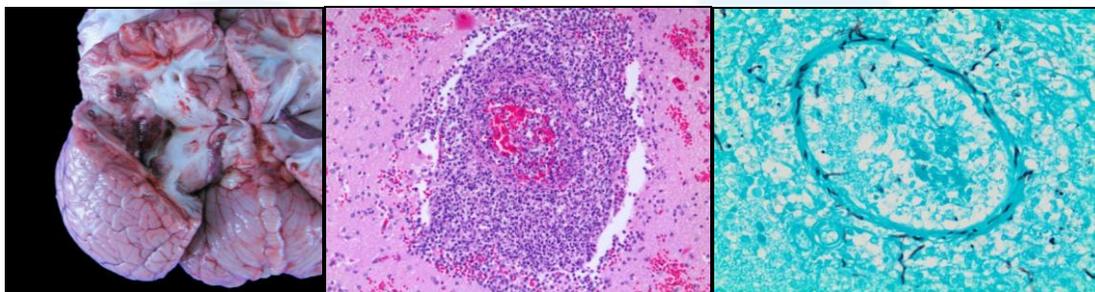
Answer sheet

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Clinical History: A 28 kg (61.73 lb), 136 cm-long, male calf striped dolphin (*Stenella coeruleoalba*) was presented for necropsy in good nutritional status and fresh. The individual stranded alive in Bahía Feliz (27.78, -15.52), Gran Canaria (Spain) and died shortly after during handling.

Necropsy findings: Multifocal to coalescing, 0.5 to 4.2 cm in diameter, well-demarcated, dark red to pink, friable foci were noted within the left temporal lobe (Figure 1) extending to the ipsilateral lateral ventricle and scattered in the thalamus.

Follow-up questions: Please describe the microscopic findings in the H&E (Figures 2 and 3) and Grocott (Figure 4) stains. Provide differential diagnoses considering these data. Any associated condition(s)?



Microscopic descriptions

Fig. 2 (H&E): Left temporal lobe (gray and white matter): the neuroparenchyma and neuropile have been diffusely effaced by a large area of liquefactive necrosis with loss of differential staining and cellular detail, numerous

perivascular cuffs, increased parenchymal cellularity and hemorrhages. Scattered vessels appear obliterated and distorted by infiltrating inflammatory cells.

Fig. 3 (H&E): Close-up image of central vessel in fig. 2. Vessel wall is circumferentially distorted and effaced by an inflammatory infiltrate expanding the Virchow-Robbin space and infiltrating the adjacent neuroparenchyma. Inflammatory infiltrates are composed of viable and degenerate neutrophils, mature lymphocytes and numerous Gitter cells (not evident at this magnification). Mild fibrin deposition expands the vascular walls. Hemorrhage, edema, reactive astrocytes and increased numbers of astrocytes and glial cells are within inflamed areas.

Fig. 4 (Grocott): Vascular wall, lumen, adjacent Virchow-Robbin space and neuroparenchyma have multiple 7-12 μm thick, irregularly parallel and septated hyphae with dichotomous and non-dichotomous branching ranging from 45-90 degrees and rare bulbous dilatations (not shown in this image).

Morphologic diagnosis: Severe, subacute, multifocal locally extensive pyogranulomatous and necrotizing encephalitis with necrotizing vasculitis, vascular thrombosis, hemorrhages and numerous intralesional fungal hyphae.

Differential etiologic diagnoses: *Aspergillus* encephalitis or *Fusarium* encephalitis.

Associated conditions: Concomitant and active infection with Cetacean Morbillivirus (CeMV).

Additional Comments: Fungal culture and morphologic analysis of colonies from brain tissue permitted the isolation and identification of *Aspergillus fumigatus*. PCR detection of Morbillivirus and Herpesvirus from central nervous system (CNS) tissues and lymph nodes were negative. CNS infection by members of the genus *Aspergillus* has been infrequently reported in cetaceans, including a northern bottlenose whale (*Hyperodon ampullatus*) (Dagleish et al., 2008), a harbour porpoise (*Phocoena phocoena*) (Dagleish et al., 2006), and *Aspergillus fumigatus* was described in three striped dolphins (*Stenella coeruleoalba*) concomitantly infected with CeMV (Domingo et al., 1992). Most relevant aspects of this case include the fact that there is no evidence of mycotic infection in any other organ or system evaluated, and tested samples for Morbillivirus and Herpesvirus, recognized immunosuppressor agents in this species, were negative.

References:

- Dagleish, M. P., et al. "Fatal mycotic encephalitis caused by *Aspergillus fumigatus* in a northern bottlenose whale (*Hyperoodon*." *The Veterinary Record* 163 (2008): 602-604.

- Dagleish, M. P., et al. "Intracranial granuloma caused by asporogenic *Aspergillus fumigatus* in a harbour porpoise (*Phocoena phocoena*)." *Veterinary record* 159.14 (2006): 458.
- Domingo, M., et al. "Pathologic and immunocytochemical studies of morbillivirus infection in striped dolphins (*Stenella coeruleoalba*)." *Veterinary Pathology Online* 29.1 (1992): 1-10.

Please send your comments/questions to the whole LCPG list by hitting "reply to all".

A final document containing this material with answers and a brief discussion will be posted on the C. L. Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).