Neuropathology of Central Nervous System Infections

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Case-Based Questions (please see page 3 for answers)

1.	A 30-year-old immunodeficient male due to HIV infection died with meningitis involving the convexity and the base of the brain. Histopathology of the brain showed abundant 4-5 µm free fungal yeasts with single buddings, floating in a mucous background, consistent with the diagnosis of:	
	a.	Aspergillosis
	b.	Coccidioidomycosis
	c.	Cryptococcosis
	d.	Histoplasmosis

2.	A 42-year-old male immunodeficient patient presents with space occupying lesions involving the basal ganglia and the cerebellum. Biopsy showed structures with the characteristics of *Toxoplasma gondii*. What type of cerebral lesion is expected?	
	a.	A granulomatous reaction with occasional giant cells.
	b.	A necrotizing chronic inflammation with lymphocytic perivascular cuffing.
	c.	Caseous necrosis and several multinucleated Langhans type giant cells
	d.	An abscess containing purulent exudate surrounded by granulation tissue and a fibrous capsule.

3.	A 41-year-old immunocompetent patient with a space-occupying lesion involving the right thalamus is submitted to a biopsy, which shows a granulomatous inflammatory lesion. The following diagnoses should be taken into account:	
	a.	Toxoplasmosis and Paracoccidioidomycosis
	b.	Bacterial abscess and Cysticercosis
	c.	Aspergillosis and Progressive Multifocal Leucoencephalopathy
	d.	Cryptococcoma and Tuberculoma

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Question 1: Correct answer and rationale: The correct answer is C - Cryptococcosis: Meningeal cryptococcosis is seen in immunodeficient patients. Relatively large yeasts with single buddings are usually free in the subarachnoid space. Coccidioides and Histoplasma also present as yeasts but are smaller and usually intracellular and the patient is not necessarily immunodeficient. Aspergillus presents as large hyphae, usually within blood vessel walls.

Question 2: Correct answer and rationale: The correct answer is B. Toxoplasma does not elicit a granulomatous reaction and does not form an abscess with purulent exudate. There is a necrotizing chronic inflammatory lesion mixed with sparse or perivascular mononuclear inflammatory infiltrate. Parasites (free or pseudocysts) may not be easily found.

Question 3: Correct answer and rationale: The correct answer is D. Cerebral Toxoplasmosis and Progressive Multifocal Leucoenphalopathy occur in immunodeficient patients; Bacterial abscess does not elicit a granulomatous reaction; Paracoccidioidomycosis, Cysticercosis, Cryptococcoma (not meningeal cryptococcosis) and Tuberculoma may occur in immunocompetent patients.