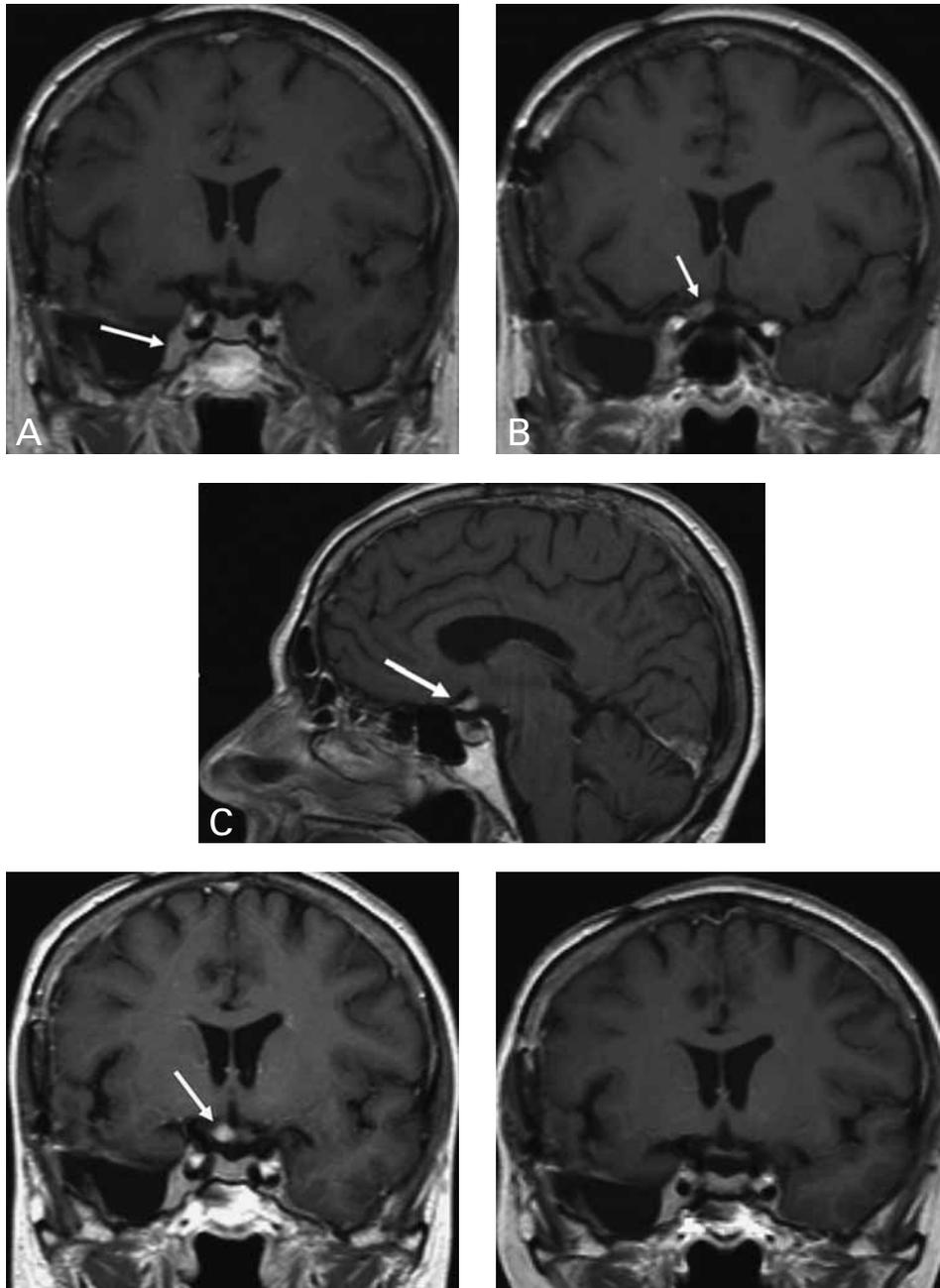


RADIATION-INDUCED OPTIC NEUROPATHY

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Key-word: Radiations, injurious effects, complications of therapeutic radiology

Background: A 61-year-old woman complained of rapidly progressing loss of vision in the right eye. Twenty months earlier, a temporal brain tumor had been partially resected, that appeared to be a malignantly degenerated fibroblastic meningioma, for which she had received post-operative radiation therapy. Ophthalmologic evaluation revealed no retinal abnormalities and no edema of the optic disc.



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Work-up

MRI of the brain, on admission, T1-Gd-enhanced image (Fig. 1) includes a coronal section at the level of the cavernous sinus (A) showing small residual meningioma at the right cavernous sinus (arrow). Coronal section through the optic chiasm (B) demonstrates focal enhancement at the right side of the optic chiasm (arrow). Sagittal section at the level of the right side of the optic chiasm (C) shows focal enhancement at the right side of the optic chiasm (arrow).

On MRI of the brain, 6 months later, coronal section, T1-Gd-enhanced image (Fig. 2), the enhancement at the optic chiasm is more pronounced (arrow).

On MRI of the brain, 10 months later, coronal section, T1-Gd-enhanced image (Fig. 3), the enhancement at the optic chiasm has disappeared.

Radiological diagnosis

Based on the MRI findings, the diagnosis of *radiation-induced optic neuropathy* was made.

Discussion

Radiation-induced optic neuropathy (RON) is an infrequent cause of delayed visual loss due to damage of the optic nerves or the chiasm, caused by radiation therapy.

Visual loss may occur months or even years after radiation therapy and its course may be sudden in onset, rapidly progressive and is irreversible.

MRI has proven to be useful in most cases of RON, demonstrating local enhancement after administration of gadolinium chelates. The enhancement represents radiation-induced disruption of the bloodbrain barrier and accumulation of gadolinium within the optic nerve.

Enhancement of the optic nerve is generally non-specific as it may also be associated with infectious and non-infectious inflammatory disorders, metastatic tumors and leptomeningeal spread of tumor, as well as it may result from other causes, including optic neuritis and multiple sclerosis.

This makes diagnostic surgery sometimes necessary, and essentially makes RON a diagnosis by exclusion.

In the presented case the previous radiation and the spontaneous resolution of the gadolinium-enhancing lesion in the optic nerve helped to establish the diagnosis.

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