

MENSTRUAL IRREGULARITY AND VISUAL CHANGES (Slide CC12-1)

CASE 14: Answers:

1. Our patient has visual field deficits that predominantly affect the temporal visual fields of both eyes. Thus, the visual pathways for both nasal hemiretinas must be compromised. Recall that this pattern can be produced by a single lesion affecting the optic chiasm. Note the deficits seen in our patient are not a "clean" case of tunnel vision since there is some involvement of the left inferior visual field as well. This simply illustrates, once again, that in real patients clinical symptoms and signs are rarely clean, and for whatever unknown reasons in our patient the lesion seems to be affecting both crossing fibers in the optic chiasm, and some fibers supplying the left superior retina.
2. One of the earliest signs of a lesion in or near the pituitary gland in women is irregularities in the menstrual cycle. Mild obesity in general is highly non-specific, however, in this context it may also suggest endocrine dysfunction.
3. Our patient has visual field deficits consistent with damage to the optic chiasm as well as subtle signs of endocrine abnormality. The most likely location for her lesion is, therefore, in or near the pituitary gland. The most common lesion in this area by far is the pituitary adenoma, a lesion that accounts for 7-10% of all intracranial neoplasms. Less common lesions that also occur in this area and can produce the same clinical features include meningioma, craniopharyngioma, aneurysm, optic or hypothalamic glioma, teratoma, brain metastases, etc.

MRI:

An MRI scan was done to examine the vicinity of the optic chiasm (see slide).

A coronal T1 weighted image at the level of the optic chiasm is shown on the left. Identify: Temporal lobes, frontal lobes, insula, cingulate gyrus, corpus callosum, frontal horns of the lateral ventricles, caudate and putamen, septal area, optic chiasm and sphenoid sinus. Note that a mass is present beneath the optic chiasm and above the sphenoid bone. This mass can be seen to compress the optic chiasm from below.

A mid-sagittal T2 weighted image is shown on the right. Note that myelinated structures such as the corpus callosum and white matter now appear dark, while CSF and grey matter appear bright. Identify: approximate boundaries of frontal, parietal and occipital lobes, the calcarine fissure, corpus callosum, thalamus, midbrain with superior and inferior colliculi, pons, cerebellum, fourth ventricle, nodulus and sphenoid sinus. Now identify the pituitary fossa. Note that it has mostly been filled by a structure that is bright on T2 (high water content) which extends out of the pituitary fossa to run anteriorly along the upper surface of the sphenoid and ethmoid bones beneath the frontal lobes. This mass corresponds to the same structure which was seen to compress the optic chiasm on the coronal image.

Clinical Course:

The patient was referred to a neurosurgeon and was admitted for biopsy and resection of the mass. The operative approach was through the right frontal and temporal bones. CSF was drained from the lumbar cistern causing the lateral ventricles partly collapse, thus, making the frontal lobe easier to gently lift away from the tumor. The mass was seen to arise from the dura of the diaphragma sellae and the anterior sphenoid bone. All visible portions of the tumor were resected with careful preservation of the adjacent vasculature, optic nerves and infundibular stalk.

Pathological sections revealed a *meningioma*. Following surgery the patient made an excellent recovery with near complete return of vision in her lateral fields over the course of six to seven months.