31 - Optic nerve CN II

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© SPMM Course 11. Cranial nerves Olfactory nerve CN I Only sensory nerve to have no thalamic relay Unilateral anosmia should raise the suspicion of a lesion affecting the olfactory nerve filaments, bulb, tract, or stria. Because the cortical representation for the smell in the piriform cortex is bilateral, a unilateral lesion distal to the decussation of the olfactory fibers (i.e. temporal/ uncinate) causes no olfactory impairment. Frontal meningiomas can cause unilateral anosmia. Head injury is probably the most common cause of disruption of the olfactory fibers Hyposmia is an early feature of Parkinson’s disease and Alzheimer’s dementia and may precede motor and cognitive signs respectively. Impaired sense of smell is seen in some patients at 50% risk of Parkinsonism. Optic nerve CN II Syndrome Lesion Unilateral one eye blindness Lesion anterior to optic chiasm e.g. optic nerve itself or retina Bitemporal hemianopia Optic chiasmatic lesion e.g. cranipharyngioma, pineal tumors Homonymous hemianopia – left Lesions of the right sided optic tract, lateral geniculate body, optic radiations and striate cortex (any retro chiasmatic structure) Homonymous hemianopia – right Lesions of the left retro chiasmatic structures Enlargement of the blind spot Any process causing disc swelling Superior quadrantanopia Optic irradiation lesion at temporal lobes of contralateral side Inferior quadrantanopia Optic irradiation lesion at parietal lobes of contralateral side Cortical blindness Occipital cortex lesions Hemianopia is a field defect covering roughly half of the field. Vertical hemianopia can be nasal or temporal. Horizontal or altitudinal hemianopia can be superior or inferior. If only one-fourth of the field is affected, this is called quadrantanopia. Bilateral field defects are homonymous when they affect the identical portion of vision in both visual fields Funnel vision: In patients with organic visual system defect, the visual field projected at 2 metre distance is larger than the field at 1 m. This is seen in glaucoma, retinitis pigmentosa, post papilledema optic atrophy, bilateral occipital infarcts with macular sparing. Tunnel vision refers to the absence of disparity between 2m and 1m fields on confrontation test. The presence of patchy spirals of field loss is seen in hysteria or malingering. Cortical blindness often results from simultaneous bilateral posterior cerebral artery occlusion. Patients often have a bilateral homonymous hemianopia with the small central field around the point of fixation (macular sparing or keyhole vision) or complete blindness. Occasionally, patients with cortical blindness deny their visual defect (Anton's syndrome). The following testing is appropriate for optic nerve:

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