



Hypertensive retinopathy

DESCRIPTION

Hypertensive retinopathy develops as a result of two broad and interplaying mechanisms:

● Arteriolosclerosis. This occurs over many years, and is thought to result mainly from leakage of plasma across the vascular endothelium. The arteriolar walls are homogeneously thickened with hyaline material, and are less able to respond to fluctuations in blood pressure.

● Arteriolar leakage and occlusion. The physiological reflex response to an acute elevation in blood pressure is vasoconstriction. However, with severe or sustained hypertension, blood components leak into the vessel wall. This results in vascular damage and disruption of the blood-retinal barrier. Histologically, there is fibrinoid necrosis with inflammatory cell infiltrates.

Sometimes hypertensive retinopathy has significant visual consequences. When vision is affected, it mostly results from focal ischaemia resulting from vascular occlusion. Loss of central vision can result from vascular leakage at the macula. Acute, severe hypertension, as in the setting of malignant hypertension and pre-eclampsia, can result in occlusion and necrosis of the choroidal arteries, leading to exudative retinal detachment. Pre-eclampsia is also associated with serous retinal detachment, with focal necrosis of the retinal pigment epithelium and outer retina. The detachment, and accompanying loss of vision, usually resolves after delivery and antihypertensive therapy.

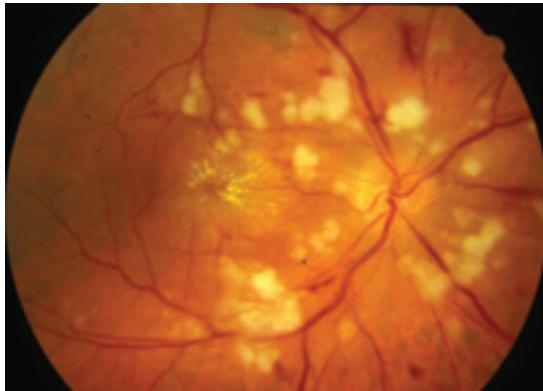
SYMPOTMS

Systemic hypertension is usually asymptomatic. In severe, uncontrolled or acute hypertension, symptoms may include headache, altered or blurred vision, altered conscious state, palpitations or chest pain.

SIGNS

Retinal hypertensive changes develop according to the duration and severity of hypertension. Many classification systems have been devised, but none is universally accepted. A possible grading is:

● The first sign of arteriolosclerosis is broadening of the arteriolar light reflex. At arteriovenous (AV) crossings, the thinner-walled veins are compressed, resulting in venous deflection or tapering. Venous dilatation or banking may occur distal to AV crossings.



● With progression of arteriolosclerosis and disturbance of homeostatic mechanisms, arterioles develop irregular points of focal constriction.

● Advanced arteriolosclerosis produces copper wiring (the increasingly opaque arteriolar wall reflecting only a small portion of the red colour of intravascular blood) and silver wiring (intravascular blood completely obscured).

Signs associated with arteriolar leakage include retinal oedema, flame-shaped haemorrhages and hard exudates (well-defined, yellow-white lipid deposits). Cotton-wool spots suggest focal retinal ischaemia caused by vascular occlusion. The presence of a macular star with optic disc swelling suggests severe hypertension requiring urgent treatment. Arterial macroaneurysms may occur, and result from linear tears in the vessel wall. Hypertensive patients are at increased risk of developing retinal detachment, nonarteritic ischaemic optic neuropathy and retinal vein or artery occlusions.

PREVALENCE

Arteriosclerosis is common in elderly patients, and is accelerated with hypertension. Most patients with chronic, moderate hypertension only develop early ocular fundus changes.

SIGNIFICANCE

Although hypertensive retinopathy is usually asymptomatic, there is potential for disabling loss of vision, which may be prevented by timely detection and treatment.

DIFFERENTIAL DIAGNOSIS

Diabetic retinopathy; Radiation retinopathy; Central retinal vein occlusion.

SEE ALSO

Cotton-wool spots, Nonarteritic ischaemic optic neuropathy; Branch

retinal vein occlusion; Central retinal artery occlusion; Retinal detachment; Pregnancy.

MANAGEMENT

Urgent

Severe, acute hypertension with disc swelling (malignant hypertension) is a medical emergency with a poor prognosis. Immediate hospital admission is required.

Blood tests

Initial investigations include full blood examination, urea and electrolytes, urinalysis, fasting blood sugar and lipid profiles, and electrocardiography. Investigations may be performed for causes of secondary hypertension, or systemic complications of hypertension. Dietary and lifestyle modifications will minimise cardiovascular risk. Antihypertensive medications confer prognostic benefits in well-defined patient groups. Regular medical and ocular reviews are essential.

Additional investigations

Fluorescein angiography may show microaneurysms, increased vascular permeability and obstruction of first-order arterioles.

Laser surgery

Treatment of macroaneurysms is not always indicated, since thrombosis and sclerosis often seal the vessel wall defect spontaneously. Aneurysms with exudation at the macula or bleeding into the subfoveal area are treated with argon laser photocoagulation. Laser surgery is also used to treat retinal detachments in certain settings.

The full series of these articles will be available in the book *Posterior Eye Disease and Glaucoma A-Z* by Bruce AS, O'Day J, McKay D and Swann P. £39.99. For further information click on the Bookstore at opticianonline.net

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