The fundus in malignant hypertension

G. Gallasch and E. Ritz
Heidelberg, Germany

‘Malignant hypertension’ is a form of accelerated hypertension which is characterized by fibrinoid necrosis of arteriolar walls. This is in contrast to so called ‘benign’ hypertension, which is characterized by elastic hyperplastic remodelling and hyalinosis of arteriolar walls. Malignant hypertension is characterized by a rapid downhill course. After 1 year 90% of untreated patients are dead. Fibrinoid necrosis of arterioles is most prominent in the vascular beds of the retina, the kidney, and the brain.

Because of the easy accessibility to funduscopic examination, the retinal changes play a paramount role in establishing the diagnosis. The retinal lesions are caused (i) by a breakdown of the blood–retina barrier with extravasation of plasma constituents, and (ii) by arteriolar narrowing causing hypoxia and ischaemic necrosis. Extravasation can be visualized by fluorescence angiography. Funduscopy is the routine diagnostic procedure. The two key lesions are focal ischaemic whitening of the retina (cotton-wool patches) and flame-shaped haemorrhages, i.e. blood extravasations following the course of the nerve fibres of the optic nerve. In advanced cases there is oedema of the optic disc (papilloedema). Moreover, choroidal lesions (Elschnig’s spots) and an exudative retinal detachment may be observed.

The illustrations show two typical funduscopic pictures and two fluorescence angiograms.

Acknowledgements. The help of Professor Anita Leys (Leuven, Belgium) in the preparation of the text is gratefully acknowledged.
Fig. 2. Full-blown lesions of 'malignant hypertension' with multiple cotton-wool spots throughout the posterior pole of the eye. At several places, cotton-wool spots completely mask the vascular lumen. Marked swelling and prominence of the optic disk with indistinct borders. Tortuosity of veins. Note apparent loss of vascular lumen (nicking) at the point where veins cross superior temporal arteries. In the periphery, numerous superficial flame-shaped and deep punctate haemorrhages are seen. In addition, ‘beading’, i.e. apparent segmentation of the superior temporal vein, is noted.

Fig. 3. Early-phase fluorescence angiogram of the optic disk in a patient with ‘malignant hypertension’. Note early hyperfluorescence of the oedematous disk, with blurred borders.

Fig. 4. Late-phase fluorescence angiogram of the same patient. Note marked swelling of the disk, which is no longer circular, and flame-shaped haemorrhages with radial orientation following the course of the optic nerve fibres.