

recovered, more or less completely, with no treatment beyond the withdrawal of the quinine. The improvement in my case began almost immediately after the quinine was stopped. The symptom-complex that we call quinine amaurosis has been summed up by Prof. Atkinson (who, by the way, is not an oculist, but a physician) as follows:—

1. Transitory blindness, complete or incomplete, usually developing suddenly. "This blindness may be more complete than in any other recoverable condition and is comparable to the blindness of optic atrophy" (Browne).
2. Colour blindness. As sight returns most patients will be found to be colour blind, partially or completely. The colour sense gradually returns and may ultimately become restored.
3. Wide dilatation of the pupils. The pupils are irresponsive to light, but are said to respond to accommodative effort. It is to be inferred that the dilatation is due to the blindness and that there is no implication of the third or sympathetic nerves.
- (4). There is pallor of the optic discs and extreme diminution of the retinal vessels, both veins and arteries. In many cases this is permanent. In cases examined early by the ophthalmoscope a whitish haze with cherry-colored spot has been observed at the macula, as in cases of embolism (Browne, Buller, Gruening).
- (5). There is contraction of the visual field. This is extreme and expands slowly. There is no reliable evidence that it ever regains its normal extent. "The contraction is concentrical or elliptical, with the longest axis in the horizontal direction" (Knapp).
- (6). Impairment of hearing (at times of total deafness), with tinnitus appears to be present almost invariably.

Besides these symptoms, which may be considered as practically of constant occurrence, there are many which are less common, such as nystagmus, anæsthesia of the cornea, ring scotoma, etc.

In one case (Dickinson's) there was a true optic neuritis which, as Atkinson points out, was probably due to malarial infection and not to the quinine. Optic neuritis from malaria has been frequently seen (Galezowsky, Hammond, Poncet). In addition to the ocular symptoms, certain general symptoms can generally be found, such as gastric disturbance (vomiting, etc.), diarrhoea, difficulty in respiration delirium (sometimes with visual hallucinations), prostration and mental hebetude. As the patient in the vast majority of cases is seriously ill before taking the quinine, these constitutional disturbances are frequently ascribed to the toxæmic effect of the disease, and do not attract any special attention. The amount of quinine which must be taken before blindness is induced is not as yet accurately determined, but in most of the recorded cases of complete amaurosis a large quantity has been taken either at a single dose or in divided doses spread over a short period.