OPHTHALMOLOGICAL EXAMINATION OF PATIENTS TAKING CHLOROQUINE

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ABSTRACT

EOGs have been routinely measured once a year in rheumatoid arthritis (RA) patients treated with chloroquine derivatives.

Criterion for the advice to stop the treatment was a decrease in the EOG of more than 20% of the value obtained before treatment was started or, where this value had not been determined, a decrease in the EOG to below 1.85, i.e. the Arden criterion.

Evaluating the results, it appears that in RA patients, examined once a year, the variability of the EOG is approximately 30% of the value obtained. Furthermore, instead of a lower limit for the normal value of 1.85, we found in the rheumatism group 1.6. If these new criteria were to be applied, less than 4% of the patients would be advised to stop chloroquine treatment. We wonder whether check-ups of these patients remain necessary when dosage of chloroquine or its equivalent is below 75 g per year.

Chloroquine treatment may cause reversible and irreversible changes to the eye (Kolb, 1965; Butler, 1966; Nylander, 1967).

The reversible ones include corneal opacities, decrease in the EOG light-rise and a perifoveal decrease in retinal light sensitivity, provided this is carefully measured by static perimetry with a red light (Carr et al., 1966).

Irreversible changes are the bull's eye formation with severe perifoveal sensitivity loss, colour vision defects and diminishing visual acuity. The danger of chloroquine intoxication is that a perifoveal defect is not noticed by the patient in the early stages and the damage may progress for a year after the treatment has been stopped. For this reason, rheumatoid arthritis (RA) patients treated with chloroquine derivatives are regularly examined in the Ophthalmological Departments of Leyden and Rotterdam. From a former study it appeared that the EOG was the most sensitive and objective method and that examination once a year was sufficient (van Lith et al., 1976). When the EOG was lowered static perimetry, which is less sensitive but more specific, was also performed.
In the last 4 years, as in the 4 foregoing years, no bull's eye formation or other irreversible damage was observed in the patients under observation. Conversely, we had the impression that in too many cases chloroquine treatment was stopped for ophthalmological reasons only.

The evaluation made 4 years ago had already made it clear that Arden's criterion of 1.85 did not satisfy as a lower limit of the normal value in RA patients (Arden & Barrada, 1962). The interindividual variability is too high. Furthermore, many RA patients had low EOGs without chloroquine treatment. This is apparent when we compare the EOG values of a group of 20 normal subjects with those of the group of 500 RA patients (figure). It is evident that in the normal group no values below 1.8 occur, while these are found in the rheumatism group. Very probably this is the reason why, if Arden's criterion were applied, no less than 37% of the patients would be obliged to stop the chloroquine treatment. Therefore, and in order to circumvent interindividual variability, we proposed that we should only take into account changes in the EOG occurring during treatment. Then we only need to consider the intraindividual variability, for which the standard deviation (SD) appeared to be approximately 10% of the EOG value in a group of normal subjects. This implies that the higher the EOG is, the larger is its variability. From then on only a decrease of more than 20% was assessed by us as pathological. With this new criterion approximately 10% of the patients were given the advice to stop chloroquine treatment.

The 20% criterion was mainly based on an examination of normal subjects within a period of some weeks. Now that we have examined a large group of RA patients several times during a period of 10 years, it has become apparent that intraindividual variability in these patients is much higher. In total we examined yearly nearly 500 patients, of whom somewhat more