

H. THRAP-MEYER, OSLO:

THE CONGO RED REACTION AND ITS SERVICEABILITY IN THE CLINIC

In recent years a good many scattered reports have been published on amyloidosis as a complication of such different lesions as exudative tuberculosis, syphilis, malignant tumors, empyema, actinomycosis, cystopyelitis, lymphogranulomatosis, leukæmies, dysentery, malaria, Still's disease, multiple myeloma and gonorrhoeal endocarditis. It seems justifiable and desirable therefore to look for this complication more rationally—the more so when we consider the serious prognostic significance usually implied in the presence of myeloidosis.

A description is given of the Congo red reaction, which is based on the circumstance that amyloid tissue absorbs Congo red that is injected intravenously.

Mention is made of the technique, and it is recommended to use the smallest dose of Congo red which under normal conditions can be demonstrated in the blood serum 1 hour after the injection.

I have used a dose of 0.08 cc. of a 1 % Congo red solution per kg. of body weight.

The presence of Congo red in the serum is ascertained by

- 1) inspection of the sample of serum ;
- 2) addition of hydrochloric acid to the serum in order to make sure that a possible rose colour of the serum really is due to Congo red, not the result of hæmolysis.

In this respect I have improved the technique by placing one drop of hydrochloric acid and one drop of serum side by side on a slide, against a white background. The least trace of blue colouring at the point of contact between the hydrochloric acid

and the Congo red-containing serum will then be noticed at once.

Previous studies of this kind here in the Scandinavian countries have been carried out on small and selected materials, that very well may give some useful information about the value of the reaction in the positive cases. It is of considerable importance, however, also to make sure about two other aspects of the reaction, namely:

1. Is it a safe method?
2. Can the outcome be positive also in the absence of amyloid?

In order to elucidate particularly these two aspects a fairly large series of tests is required.

I have performed the test on 128 patients admitted to Martina Hansen's Hospital, making a total of 191 reactions. Of these patients, 111 were suffering from tuberculous lesions in bones, joints or lymph glands, while the remaining 17 suffered from other chronic lesions and had been admitted to the hospital under mistaken diagnoses.

In this material, 5 patients gave positive reactions. All five belonged to the group of adults with tuberculosis—1 woman and 4 men. A positive reaction was obtained altogether 11 times. Once a Congo red reaction was positive without being accompanied by albuminuria; the other positive reactions were all associated with albuminuria. There was no demonstrable enlargement of the liver or spleen in these patients with a positive reaction; and this probably indicates that the amyloidosis in each of these cases was at that time in the initial stage.

There has been no occasion to check up the positive reactions by autopsy. All the reactions, however, positive as well as negative have been consistent with the clinical judging of the respective cases.

All the five amyloid patients have had their illness longer than the average duration of illness for the groups to which they belong.

The reaction has never been associated with any sign of any risk whatever, and it requires no preliminary preparation of

the patients, who thus need not be fasting, as has been stated by other authors.

Congo red is eliminated with the urine, where it can be demonstrated by filtration of the entire portion voided and then make a hydrochloric acid test on the filter paper.

In most the case the presence of Congo red in the urine may be demonstrated in this way even on the day of the injection; but in many it takes 24 hours, and in some 48 hours, before the elimination of Congo red is demonstrable. In 6 patients it was not practicable at all to demonstrate any Congo red in the urine with this technique even though the urinary output was examined thoroughly for up to 7 days after the injection.

This examination of the urine is of no significance to the estimation of the Congo red reaction as a clinical method. No doubt it may be dispensed with in daily practice.

I find the Congo reaction quite easy to perform and simple to interpret. It can be carried out without any risk of untoward effect.

In so far as one may be allowed to draw conclusions from a material that is it not checked up by autopsy, I consider the reaction very reliable for demonstration of possible amyloidosis.