Correspondence

References


Serum Monamine Oxidase Activity in Experimental Schistosomiasis Japonica

Sir,—Recent reports describing the usefulness of the serum monamine oxidase (SMO) determination as a diagnostic procedure in evaluation of human liver cirrhosis (Nitta et al., 1971; Ito et al., 1971) prompted our investigation of this assay as a supplemental technique for estimation of hepatic fibrosis in schistosomiasis.

McEwen and co-workers (1963, 1967) described a monamine oxidase present in human serum and found that increased enzyme activity was closely associated with hepatic fibrosis and portal hypertension. Their studies indicated that SMO activity may be a more sensitive index of “sinusoidal” pressure than are the physical signs of portal hypertension. Ito and co-workers (1971) emphasized the relationships between the biosynthesis of collagen and SMO activity. Significantly elevated SMO levels were observed in human cases of advanced fibrosis and liver cirrhosis, and enzyme activity increased in parallel with the progress of hepatic fibrosis as determined by needle biopsies.

Since fibrosis occurs early in heavy experimental Schistosoma japonicum infections of rabbits (Kojima, 1970), we selected this host as a model to study the changes in SMO concentration with the progression of acute schistosomiasis japonica. Serum was collected from infected and normal rabbits during necropsies conducted 1, 5 and 9 weeks after schistosome eggs first appeared in the faeces. The sera were stored at −20°C, and assays on all sera were performed on 2 successive days.

The serum monamine oxidase activity was determined by measuring the enzymatic conversion of benzylamine to benzaldehyde as described by McEwen and Cohen (1963) with the following modifications:

1. The volumes and concentrations of reagents used were those employed by Nilsson et al. (1968) or by Fujinami et al. (1971);
2. a 2-hour rather than a 3-hour incubation time was used for rabbit serum; and
3. a standard curve plotted with known quantities of purified benzaldehyde was used to determine enzyme units. One enzyme unit was defined as the production of 1 millimicromole (mM) of benzaldehyde per ml. of serum per hour at 37°C. (Fujinami et al., 1971). SMO activity was determined for sera from 37 apparently healthy human blood donors (age range, 18–54 years) for evaluation of our assay procedure. The mean SMO activity of 22.8 ± 5.2 (S.D.) enzyme units compared favourably with the value of 17.9 ± 2.9 units reported by Fujinami et al. (1971) and by others when converted to common units.

The SMO activity for 18 uninfected rabbits was 223.3 ± 58.4 (S.D.) enzyme units; for 18 rabbits bled one week after patency, it was 339.2 ± 76.4 units (P < 0.001 by "t" test); for 19 bled 5 weeks after patency, it was 312.8 ± 66.9 units (P < 0.001); and for 5 bled 9 weeks after patency, it was 350.0 ± 50.9 units (P < 0.01).

Thus, the SMO activity in rabbits infected with Schistosoma japonicum was significantly elevated by 1 week after eggs were first detected in the faeces, but this did not increase progressively during the 9-week period studied. Since these rabbits were heavily infected (averaging 35 worm pairs per kg. of body weight) in terms of comparable human infections, it is possible that the host already was exhibiting the maximal response in terms of SMO...
activity by one week after patency. Hence, a further elevation of SMO activity was not detected when measured at 5 and 9 weeks. We are attempting to learn more concerning this aspect from continuing studies on more moderate infections of longer duration.

Liver biopsies are frequently inadequate for the diagnosis of Symmers's fibrosis (BoGLIOLO, 1959), in addition to entailing risk to the patient. Therefore, we believe the determination of SMO activity in patients with proved schistosome infections may provide a valuable supplemental means of evaluating both the present degree of liver fibrosis and its progression with time. Such information would be valuable in planning antischistosomal therapy and in prognosis. More definitive studies of the relationship of serum monamine oxidase activity to schistosomiasis japonica in rabbits and human patients are in progress.

We are, etc.,

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REFERENCES


MEDICAL AID TO DEVELOPING COUNTRIES: RADIOGRAPHY

Sir,—May I refer to the article by Dr. C. V. Foll concerning medical aid to developing countries and particularly to the conclusion referring to medical auxiliary training? I would wish to congratulate Dr. Foll on his article. As a constructive suggestion may I propose that a particular field in which Britain is in a unique position to assist developing countries is the training of diagnostic radiographers, both in the United Kingdom and in the developing countries themselves. The standard of British diagnostic radiography is high and the experience of the Society of Radiographers throughout the world unique. The Society of Radiographers has already played an important though little acknowledged rôle in this way, not only directly, but also through its association with the International Society of Radiographers and Radiographic Technicians which is in “special relationship” with the World Health Organization.

Perhaps more important than the simple rôle of medical auxiliary training, competent radiography is the basis of radiological diagnosis without which routine clinical diagnosis and more advanced radiological investigation are impossible or of doubtful value.

Most significant of all is the need to ensure that expensive radiographic examinations are competently and economically performed with the minimum of radiation hazard to the community.

Hence Britain is particularly able and competent to assist developing countries in the training of diagnostic radiographers and, in so doing, not only would Britain assist in the training programmes of such developing countries but would enhance in those countries general medical care and assist in the public health measure of minimizing the total population radiation dose.

I am, etc.,

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