

Suid-Afrikaanse Tydskrif vir Geneeskunde

South African Medical Journal

VAN DIE REDAKSIE

DIE JONGSTE TOETSE VIR LEWERFUNKSIE

Hoewel die biochemiese toetse wat tans gebruik word om lewerfunksie te toets, ondersteun waar nodig deur naald-biopsie, dit gewoonlik moontlik maak om die oorsaak van geelsug of lewervergroting vas te stel, kom ons nogtans dikwels diagnostiese struikelblokke teë by die onderskei tussen obstruksies *buite* en *binne* die lewer. Verskeie nuwe toetse is in die afgelope tyd gebruik hopende dat hulle by sulke probleemgevalle nuttig sal wees.

Die berekening van die glutamienoksaalasynsuur-transaminase in die serum het vandag 'n vasgestelde waarde by die diagnose van lewersiekte sowel as van hartspierverstoping.¹ Dit styg geweldig na ernstige lewerbesering, maar by eenvoudige obstruksiegeelsug is dit net effens hoër as die normale; by sirrose varieer dit geweldig. Die korrelasie tussen hierdie toets en ander 'lewerfunksie-toetse' is maar swak; 'n verhoogde transaminase-gehalte dui blykbaar op vernietiging van lewerselle.

Die reaksie op ACTH is nog 'n nuttige toets: by pasiënte met obstruksie-geelsug veroorsaak deur virus-lewerontsteking ('galbuis-lewerontsteking') daal die bilirubien en alkaliese fosfatase in die serum;² geen soortgelyke reaksie is dusver gerapporteer by gevalle van verstoping van die galweë binne die lewer weens ander oorsake, soos bv. chlorpromazine nie. Indien die serum-bilirubien daal wanneer steroïede toegedien word aan 'n pasiënt met 'n verstoping buite die lewer, styg dit weer as die hormoontoediening gestaak word.³

Volgens Rachmilewitz *et al.*⁴ stort die beskadigde lewerselle opgegaarde vitamien B₁₂ in die bloedsomloop uit; na bewering word hoë gehaltes B₁₂ in die serum teëgekomp by akute virusontsteking van die lewer, maar *nie* by buitelereise galwegverstoping met gepaardgaande geelsug nie.

Die kleurstof Rose Bengal verbind met die serumproteïene ná binnearse inspuiting en word dan deur die lewer uit hierdie proteïene geëkstraheer. Dit kan met ¹³¹I gemerk word; dit word gemeen dat die snelheid waarteen die radioaktiewe verbinding deur die lewer opgeneem word (aangetoon deur eksterne kontrole) 'n nuttige toets is van lewerfunksie.⁵ Hierdie toets is na bewering ook nuttig om buite- van binnelewerse verstoping te onderskei.⁶

Nog 'n nuwe toets is die berekening van die konsentrasie van sekere galsuurfraksies in die serum.⁷ Normaalweg is die peil van trihidroksie en dihidroksie galsure in die serum 1.4 en 0.4 mg. per 100 ml. respektiewelik. By ernstige lewerbeskadiging swaai die verhouding om; as dit so aanhou is 'n swak prognose te verwagte. By verstoping buite sowel as binne die lewer styg die konsentrasie van beide fraksies en bly die verhouding konstant. Hoewel hierdie

EDITORIAL

NEWER TESTS OF HEPATIC FUNCTION

While the currently-used biochemical tests of liver function, reinforced where indicated by needle biopsy, usually enable the cause of jaundice or hepatomegaly to be discovered, diagnostic difficulties often exist in the differentiation of extrahepatic and intrahepatic obstruction. Several tests have recently been introduced in the hope that they will prove useful in these problem cases.

Estimation of the serum glutamic oxalacetic transaminase is now of established value in the diagnosis of liver disease as well as of myocardial infarction.¹ It is greatly elevated after acute liver injury but only slightly so in pure obstructive jaundice; in cirrhosis the levels vary widely. Correlation with other 'liver function tests' is poor; an elevated transaminase value appears to indicate liver-cell destruction.

Another useful test is the response to ACTH: in patients with obstructive jaundice due to viral hepatitis ('cholangiolitic hepatitis') the serum levels of bilirubin and alkaline phosphatase fall;² a similar response has not yet been reported in cases of intrahepatic cholestasis due to other causes, e.g. chlorpromazine. Should the serum bilirubin fall when steroids are given to a patient with extrahepatic obstruction it rises again once the hormones are stopped.³

According to Rachmilewitz *et al.*, damaged liver cells release stored vitamin B₁₂ into the circulation; high serum-B₁₂ values are said to be found in acute viral hepatitis, but not in extrahepatic biliary obstruction with jaundice.

The dye Rose Bengal becomes bound to the serum proteins after intravenous injection and is then extracted from them by the liver. It can be labelled with ¹³¹I; the rapidity with which the radio-active compound is taken up by the liver (as shown by external monitoring) is thought to be a useful test of liver function.⁵ This test is also said to be helpful in distinguishing extrahepatic from intrahepatic obstruction.⁶

Another new test is the estimation of the concentration of certain bile-acid fractions in the serum.⁷ Normally the serum levels of trihydroxy and dihydroxy bile acids are 1.4 and 0.4 mg. per 100 ml. respectively. With severe liver injury the ratio becomes reversed; should this persist, the prognosis is likely to be poor. In both extrahepatic and intrahepatic obstruction the concentration of both fractions is increased

toets dus blykbaar nuttig is om die erns van die lewerbeskadiging en die hoop op herstel te bereken, help dit nie baie om die plek waar die galwegverstoping plaasvind, te bepaal nie.

Sommige van hierdie toetse is ook nuttig by gevalle waar uitsaaingsgewasse van die lewer vermoed word. Dit is reeds al 'n hele rukkie bekend dat sekondêre neerslae in die lewer dit moontlik maak vir ensieme soos alkalasie fosfatase om in die bloedsomloop te kom. Na bewering is 'n styging in die serum-transaminase 'n sensitiewe maatstaf van die teenwoordigheid van neoplastiese neerslae in die lewer;¹ maar hoë transaminasegehaltes kom by verskeie siektes voor. Dit is ook bewys dat die vitamien B₁₂ in die serum styg wanneer daar uitsaaingsgewasse in die lewer is (dit kom nie voor by kwaadaardigheid sonder sekondêre lewergewasse nie).⁸

Dit lyk dus of hierdie toetse van praktiese waarde kan wees, en hulle vestig bowendien die aandag op aspekte van lewerfunksie wat nog nie goed verstaan word nie. Dit is heel moontlik dat hul gebruik by moeilike gevalle van lewerkwale baie lonend kan wees.

1. Wroblewski, F. en LaDue, J. S. (1955): *Ann. Intern. Med.*, **43**, 345.
2. Johnson, H. C. en Doenges, J. P. (1956): *Ibid.*, **44**, 589.
3. Katz, R., Ducci, H. en Alessandri, H. (1957): *J. Clin. Invest.*, **36**, 1370.
4. Rachmilewitz, M., Aronovitch, J. en Grossowicz, N. (1956): *J. Lab. Clin. Med.*, **48**, 339.
5. Englert, E. Jr., Burrows, B. A. en Ingelfinger, F. J. (1957): *Clin. Res. Proc.*, **5**, 209.
6. Wood, J. A. en Korst, D. R. (1957): *Ibid.*, **5**, 210.
7. Carey, J. B. Jr. en Watson, C. J. (1957): *Gastroenterology*, **33**, 267.
8. Grossowicz, N., Hochman, A., Aronovitch, J., Izak, G. en Rachmilewitz, M. (1957): *Lancet*, **1**, 1116.

and the ratio is unchanged. Thus, while this test appears to be of value in assessing the severity of liver damage and the likelihood of recovery, it is less useful in indicating the site of biliary obstruction.

In addition, some of these tests are helpful in cases where metastatic tumours of the liver are suspected. It has for some time been known that secondary deposits in the liver may enable enzymes, e.g. alkaline phosphatase, to enter the circulation. Elevation of the serum transaminase is said to be a sensitive index of the presence of neoplastic deposits in the liver;¹ but high transaminase values are found in a variety of disorders. It has also been shown that the serum vitamin-B₁₂ level is raised when there are metastases in the liver (this is not found in malignancy without liver secondaries).⁸

Not only do these tests seem likely to be of practical use, but they also focus attention on ill-understood aspects of liver function. Their application to difficult cases of hepatic disease may well be rewarding.

1. Wróblewski, F. and LaDue, J. S. (1955): *Ann. Intern. Med.*, **43**, 345.
2. Johnson, H. C. and Doenges, J. P. (1956): *Ibid.*, **44**, 589.
3. Katz, R., Ducci, H. and Alessandri, H. (1957): *J. Clin. Invest.*, **36**, 1370.
4. Rachmilewitz, M., Aronovitch, J. and Grossowicz, N. (1956): *J. Lab. Clin. Med.*, **48**, 339.
5. Englert, E., Jr., Burrows, B. A. and Ingelfinger, F. J. (1957): *Clin. Res. Proc.*, **5**, 209.
6. Wood, J. A. and Korst, D. R. (1957): *Ibid.*, **5**, 210.
7. Carey, J. B., Jr. and Watson, C. J. (1957): *Gastroenterology*, **33**, 267.
8. Grossowicz, N., Hochman, A., Aronovitch, J., Izak, G. and Rachmilewitz, M. (1957): *Lancet*, **1**, 1116.