Letters to the Editor

Serum gamma-glutamyl transferase activity in volunteer blood donors

Serum gamma-glutamyl transferase (EC 2.3.2.2; GGT) activity is a sensitive index of liver function, and raised levels are found in a wide range of liver diseases (Rosalki, 1975). While normal values for GGT activity have been reported by many workers, the majority of these are based on limited numbers. There is need for further information on the range of variation in healthy adults, particularly with regard to variation with age. The purpose of this study was to measure the range of GGT activity in a healthy non-hospitalised population.

Nine hundred and twenty-nine randomly selected healthy blood donors, attending for their regular six-monthly donation, participated in this study. GGT activity was determined on an LKB 8600 Reaction Rate Analyser using reagents prepared in our laboratory. Serum (0-1 ml) was incubated with L-γ-glutamyl-p-nitroanilide in water (1-0 ml; 4-6 mmol/l) for 15 minutes at 35°C. The activating substrate was glycollic acid in tris (hydroxymethyl)aminomethane hydrochloride buffer (0-1 ml; 575 mmol/l). The reaction rate was followed spectrophotometrically at 410 nm. The final conditions in the reaction mixture were as follows: L-γ-glutamyl-p-nitroanilide—40 mmol/l; glycollic acid—50-0 mmol/l; tris(hydroxymethyl)aminomethane hydrochloride—190 mmol/l; pH 8-05. Post donation serum samples were used in this study and between batch variation was of the order of 1-5 IU.

Our results are shown in the Table. Males had consistently higher levels of activity compared to females, as noted in many previous studies, and this difference was observed at each age level. There was no alteration of activity with advancing age. A log normal distribution curve was observed for both sexes. Further studies are under way to determine the effect of short- and long-term plasmapheresis on enzyme levels.

Reference


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Table  GGT values (IU/l) from 929 blood donors

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<th>Range</th>
<th>Percentile</th>
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Effective thyroxine ratio and venous stasis

Increased venous pressure can produce a protein-free exudate at the capillary level and thus increase the concentration of plasma proteins and the substances bound to them. Both the upright posture and venous compression can significantly increase serum concentrations of the highly protein-bound thyroid hormones, thyroxine and triiodothyronine (Judd et al., 1975). The effective thyroxine ratio (ETR), however, being proportional to the free or non-protein bound circulating thyroxine concentration (Wellby et al., 1973), should not be affected by venous stasis. The following observations have verified this.

Blood was collected from healthy volunteers without stasis and also 10-15 minutes after a sphygmomanometer cuff
had been inflated to midway between systolic and diastolic blood pressures. Total protein was estimated by the Technicon SMA 12/60 biuret method which had a within-batch coefficient of variation of 1-1%. ETR determinations (Mincey et al., 1974) were performed in duplicate and had a within-batch coefficient of variation of 1-4%. The results are shown in the Figure.

Although venous stasis can increase serum total thyroxine concentration it has no significant effect on the ETR or on a free thyroxine index (Judd et al., 1975) because these latter methods have a 'built-in' adjustment for changes in protein binding. It is reassuring to know that the avoidance of stasis when collecting blood although ideal, is not essential for an accurate ETR.

References


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Book reviews


Dr Grubb has produced an eminently practical Atlas for cytologists in the field of gynaecology. With 318 colour illustrations she has had ample scope to take the trainee through the characteristics and pitfalls of diagnosis in her inimitable way, born of years of practice in one of the most successful training schools in the country. It is a pity that some of the plates seem to lack colour balance. The choice of some of her illustrations of severe dysplasia and invasive cancer seem to be closely similar and demand full histological confirmation, but this is probably the purpose of a full treatise on such a subject.

Her text is again characteristic of her teaching style and presents clear and definite criteria for malignancy and other changes which bring to the surface the weakness and confusions in cytology terminology. Many cytopathologists do not like to use the word 'malignant' as she does for a carcinoma in-situ cell, and still others (though not she) will no longer use the term 'dyskaryosis' to describe the nuclear changes of dysplasia and malignancy. I feel that there is an error in the definition of adenocanthoma in Figs 21.9 and 21.10 where such a tumour should by right not display malignant squamous cells. There is a great need for the English cytopathologists to establish a standardised nomenclature to which all could adhere. The classification of invasive squamous cancer used by Dr Grubb is particularly British and does not meet any of the international, WHO, IAC, or American viewpoints.

In all, the volume is an excellent addition to any cytologist's library and a most useful reference book for those needing to review the wide and confusing range of cytological change in disease.

O. A. N. HUSAIN

WHO Working Group on the Organization and Methodology of Cytology Laboratories (Moscow, 16-20 November 1976). (Copies of the final report will be available later from the World Health Organisation)

This meeting and its report relate to one of the periodic reviews by the WHO of areas of public health laboratory activity.

It accepts that cytology has proved its worth as both a cancer detection and diagnostic system, involving a wide range of organs and sampling methods, and in its use in hormone assessment, infective conditions, monitoring drugs, radiation, and cytotoxic effects.

The organisation of cytology laboratories is given consideration, especially in relation to screening programmes, clinical diagnosis, research, and teaching, and laboratories are divided into the routine and academic types. Cytogenetics and other investigations, such as biomedical research and automation (for both data processing and cell scanning), may involve either type of laboratory, but the academic one would be responsible for teaching and fundamental research.

It is stated unequivocally that the cytology laboratory must be under the direction and control of a medically qualified pathologist and that training of the latter (as for a histopathologist) should be for not less than four years, with cytology included in the syllabus, or should be a 6-12 months' attachment to a large cytology department after higher qualification. Similarly, the training of a cytotechnician should be well grounded in general technology and last at least three years, one year of which should be devoted to practical work.

Much of the primary data utilised by the conference has come from the three documents on the code of quality practice and the curricula for both cytopathologists and cytotechnologists prepared by the British Society for Clinical Cytology, even though none of these proposals has been put into practice in this country.

O. A. N. HUSAIN


This is the first volume of a new series, 'Research Monographs on Cell and Tissue Physiology' and it sets a suitably high standard. It consists of 14 chapters by international experts and treats in great detail with platelet physiology which is fully related to that of other cells. It is wide
Effective thyroxine ratio and venous stasis.

P J Phillips, R W Pain and J D Philcox

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