hospitals were attributed to publicity about overuse.⁴ In our hospital use of chest radiography has fallen by 55% since the first survey. That appropriate use has been sustained or improved is suggested by a small increase in the proportion of patients admitted with an abnormal chest x ray film. The increased proportion of examinations showing significant abnormality from 9% to 24% suggests a reduction in routine or screening radiography. The findings suggest that in adult psychiatry chest radiography should be used when there is clinical evidence of cardiothoracic disease or unexplained failure of an episode of mental illness to remit, and screening should be confined to alcoholism.¹

A reduction of 51% in the use of skull radiography occurred after guidelines were issued to junior staff assessing head injuries.⁵ In our hospital the use of skull radiography has fallen by 42% since the first survey. All patients with an abnormality on computed tomography showed normal results on skull radiography. Skull radiography is thus not useful in adult psychiatry.

The use of computed tomography increased from 0.8% to 3.3% of admissions. The proportion of abnormal results increased from 31% to 36%, suggesting that clinical judgment is improving. Abnormal radiological findings were confined to patients with clinical evidence of organic brain disease. Prolonged or atypical affective psychoses accounted for most

normal scans. The findings suggest that in adult psychiatry computed tomography is of value only when there are symptoms or signs of neurological disease.

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Low serum C4 concentrations and microangiopathy in type I and type II diabetes

Low C4 concentrations are thought to occur in about 25% of type I diabetics and are probably related to an increased frequency of the null alleles for C4.^{1,2} A recent study suggested that low C4 concentrations reflect and may predict microvascular disease in type I diabetics.³ We studied the relation of serum C4 concentrations to microvascular complications in 123 type I and 140 type II diabetics.

Patients, methods, and results

We studied all 263 patients who attended the Austin Hospital diabetes clinic between November 1984 and April 1985. The patients were regarded as having type I diabetes if they had persistent ketonuria, weight loss on presentation, and insulin dependency within one month of diagnosis (n=123); all other patients were classified as having type II diabetes (n=140). Serum C4 concentrations were measured by radial immunodiffusion (Kallestad).⁴ Proliferative retinopathy was diagnosed independently by an ophthalmologist. Diabetic nephropathy was defined as proteinuria exceeding 0.3 g/24 h by a trichloroacetic acid precipitation method (all dipstick results (Albustix) ≥ 0.3 g/l).⁵ Statistical comparisons were performed using Student's *t* test for normally distributed variables, the Mann-Whitney (W) test for C4 concentrations, and χ^2 analysis for comparing the prevalence of retinopathy and proteinuria on dipstick testing between different groups.

Fourteen type I and 11 type II diabetics had proliferative retinopathy, and 19 and 24, respectively, had proteinuria on dipstick testing; creatinine clearance was 1.74 (0.06) ml/s in type I and 1.61 (0.06) ml/s in type II diabetics. Type I diabetics had lower C4 concentrations than type II diabetics (median 20 v 27.5 mg/100 ml; Mann-Whitney test $p<0.001$). There was no significant difference in C4 concentrations between patients with and without microvascular complications in type I or type II diabetics (table). There was no correlation between C4 concentrations and duration of diabetes, the age of the patient at the time of study, and the age of the patient at diagnosis.

Mean (SEM) serum C4 concentrations in diabetics with and without microvascular complications (mg/100 ml)*

	Type I diabetics		Type II diabetics	
	No of patients	C4	No of patients	C4
Total group	123	22.0 (0.8)	140	28.3 (0.8)
Proliferative retinopathy	21	25.9 (2.8)	11	30.1 (4.6)
Diabetic nephropathy	21	23.0 (2.1)	32	28.9 (2.0)
No microvascular complications	97	21.2 (0.8)	102	28.2 (0.9)

*Normal range based on 50 normal subjects is 16-45 mg/100 ml (means 2SD). Type I v type II: $p<0.001$.

The prevalence of microvascular complications in type I diabetics with C4 concentrations below the normal range (<16 mg/100 ml) was compared with that in type I diabetics with C4 concentrations within the normal range. There was no difference in the prevalence of retinopathy (numbers of patients with nil, background, proliferative retinopathy 19, 5, 3, v 71, 14, 11; $\chi^2=0.21$, NS), creatinine clearance (1.74 (0.11) v 1.74 (0.07) ml/s; $p=0.99$), or proteinuria on dipstick testing (6/27 v 14/95; $\chi^2=0.86$, NS) between type I diabetics with low (n=27) and normal C4 concentrations (n=96).

Comment

These results confirm previous reports that about a quarter of type I diabetics have subnormal C4 concentrations.¹ This was not found in type II diabetics. Type I diabetics with advanced microvascular disease did not show further lowering of C4 concentrations compared with diabetics without complications. These data are in contrast with findings of a previous study in which type I diabetics with complications had lower C4 concentrations than type I diabetics without complications.³ The difference in results between the two studies is difficult to explain in terms of patient selection, criteria for type I and type II diabetes, definition of microvascular complications, and assay methods. This study suggests that low serum C4 concentrations are a manifestation of type I diabetes, independent of the presence of microvascular disease.

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