

to enable a suitable cut-off point to be discerned; presenting a series of straight lines joining the points rather than an artificially produced 'curve' is more helpful in this case. A second purpose is to judge the relative merits of a series of tests and, in this case, the judgment rests upon which of the series of 'curves' lies nearest to the top left hand corner or alternatively, has the largest area under the curve. In this case, therefore, smooth curves may suitably illustrate the findings.

Readers requiring further information concerning ROC analysis will find the study by Murphy *et al* (1987) to be useful.

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Reference

MURPHY, J., BERWICK, D. M., WEINSTEIN, M. C. *et al* (1987) Performance of screening and diagnostic tests: application of receiver operating characteristic analysis. *Archives of General Psychiatry*, **44**, 550–555.

CT findings in schizophrenia

SIR: I would like to reply to comments by Ingraham and Crichton & Hughes (*Journal*, March 1990, **156**, 444–453) on our recent paper (*Journal*, October 1989, **155**, 444–450).

In our study, multivariate analyses were used in order to correct for age and gender because enough matched controls were not available. In these multiple discriminant analyses, the enlargement of lateral ventricle: brain ratio (VBR_l), although present, was not significant to distinguish schizophrenic patients from normal controls, nor familial patients from non-familial ones. We recently reproduced these computerised tomography (CT) findings in a magnetic resonance imaging (MRI) study (Uematsu & Kaiya, 1988, 1989) of 40 schizophrenic patients and 17 normal controls. The subjects were all males, aged under 50, and there was little overlap with those in the CT study. Student *t*-tests showed significantly higher VBR_l in schizophrenic patients than normal controls, and in schizophrenics with horizontal transmission than non-familial patients (unpublished data). However, multiple discriminant analyses again showed that, here again, VBR_l was not a central finding for diagnosis and heredity although VBR_l was significant both for the diagnosis of

schizophrenia and for the differentiation of familial and non-familial patients.

The idea to divide schizophrenics into three subgroups stemmed from the contagion hypothesis (Crow & Done, 1986) related to the retrovirus/transposon hypothesis (Crow, 1984). Crow & Done (1986) found a correlation of age of onset between siblings and a tendency for the disease to occur at an earlier age in the younger sibling. One of their explanations for this finding was that the disease is transmitted from those who already have it to relatives who possess the genetic predisposition. We performed our study based on this hypothesis and showed a possibility that schizophrenia with horizontal transmission is a distinctive disease.

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Chronic psychoses in Turner's syndrome

SIR: Bamrah & MacKay (*Journal*, December 1989, **155**, 857–859) presented a case of chronic psychosis in Turner's syndrome and reviewed the literature. I would like to add the following information to their report.

Firstly, the 45, XO sex chromosome karyotype makes up 51% of Turner's syndrome (TS) while mosaics of the 45 XO/46 XX sex chromosome karyotype make up 18% and 25% carry an X chromosome abnormal in structure (Fishbain & Vilasuso, 1981). Buccal smear analysis will not necessarily identify a mosaic for which karyotypic analysis in leucocyte culture is required (Akesson & Olanders, 1969). Drs Bamrah & MacKay did not specify how their patient's karyotypic pattern was determined. If only buccal smear analysis was utilised, it is possible that their patient was a TS mosaic.