

## Ultrasound in the screening of patients with cirrhosis with large varices

The presence of varices reduces the survival of patients with cirrhosis, and the risk of bleeding is higher when large varices are present.<sup>1,2</sup> Ultrasonography has been advocated as a screening test for portal hypertension.<sup>3</sup> We have evaluated whether this non-invasive technique might be useful in predicting large varices.

### Patients, methods, and results

Ultrasonography was performed in 164 consecutive patients with histologically proved non-ascitic cirrhosis. The diameters of the portal, splenic, and mesenteric veins were measured and endoscopy performed in all patients to detect varices. Varices were defined as large when they occupied more than one third of the oesophageal lumen.<sup>4</sup> Commercially available real time equipment was used. The diameter of the portal vein was measured at the widest point directly in front of the vena cava on a scan in the sagittal plane. The diameters of the splenic and superior mesenteric veins were measured on scans in the transverse and sagittal planes respectively. Two independent observers performed the ultrasonography and the degree of agreement was evaluated.

The portal vein was visualised in all 164 patients, the splenic vein in 131 (80%), and the mesenteric vein in 116 (71%). In 148 patients (90%) there was agreement between the two observers. In the remaining 16 patients there was disagreement within 1 mm: in this case the lower value was taken. The figure shows the diameters of the three veins and their relation to the presence of varices; there was a large overlap between patients with and

varices were large. Similarly, we established a lower limit of the diameter of each vein below which the presence of large varices can be ruled out.

The mesenteric vein seems more useful than the others because it eliminated the possibility of large varices in 21% of the patients. The portal and splenic veins were less sensitive in excluding the presence of large varices. When the three veins were used together the possibility of large varices was eliminated in 20% of patients.

In conclusion we think that it is useful to screen all patients with cirrhosis with ultrasound in order to save some useless endoscopies.

<sup>1</sup> Pagliaro L, D'Amico G, Maringhini A, *et al.* Natural history of non-alcoholic cirrhosis. In: Orloff MJ, Stipa S, Ziparo V, eds. *Medical and surgical problems of portal hypertension*. London: Academic Press, 1980: 109-17.

<sup>2</sup> Lebre D, De Fleury P, Rueff B, Nahum H, Benhamou J. Portal hypertension, size of esophageal varices, and risk of gastrointestinal bleeding in alcoholic cirrhosis. *Gastroenterology* 1980;**79**:1139-44.

<sup>3</sup> Bolondi L, Gandolfi L, Arieti V, *et al.* Ultrasonography in the diagnosis of portal hypertension: diminished response of portal vessels to respiration. *Radiology* 1982;**142**:167-72.

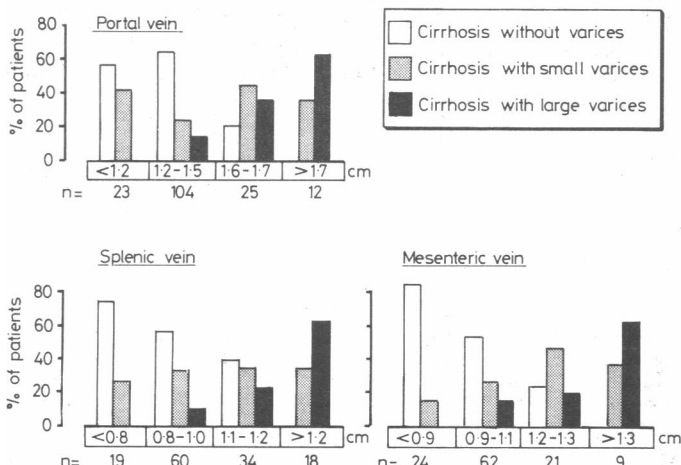
<sup>4</sup> Beppu K, Inokvechi K, Koyanagy N, *et al.* Prediction of variceal hemorrhage by esophageal endoscopy. *Gastrointest Endosc* 1981;**27**:213-8.

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Relation between diameters of portal, splenic, and mesenteric veins and presence of varices.

without varices. No patient with large varices, however, had a portal vein <math><1.2</math> cm, a splenic vein diameter <math><0.8</math> cm, or a mesenteric vein diameter <math><0.9</math> cm. Thus we identified 32 patients without large varices. All patients had varices when the portal vein diameter was <math>>1.7</math> cm, the splenic vein diameter <math>>1.2</math> cm, or mesenteric vein diameter <math>>1.3</math> cm; in each case two thirds of these patients had large varices.

### Comment

Endoscopy is the preferred technique for diagnosing oesophageal varices and is frequently used to identify large varices to make a prognostic evaluation in patients with cirrhosis. Ultrasound has recently been shown to be useful for screening for portal hypertension.<sup>3</sup>

We evaluated the relation between the diameters of the portal, splenic, and mesenteric veins (echographic evaluation) and the presence of large varices (endoscopic evaluation). We could find no diameter above which the presence of large varices could be predicted with certainty; however, a portal vein diameter <math>>1.7</math> cm, a splenic vein diameter <math>>1.2</math> cm, or a mesenteric vein diameter <math>>1.3</math> cm indicated the presence of varices in every case; in most cases these

## Maternal smoking and anencephaly

In 1979 Evans, Newcombe, and Campbell published a valuable analysis<sup>1</sup> of the Cardiff Birth Survey, showing little association between maternal smoking in pregnancy and most types of those congenital defects which are recognised neonatally. They did, however, find a weak association with anencephaly (132 cases) and spina bifida (178 cases), even after controlling for social class. We present an analysis of 491 pregnancies resulting in the birth of a singleton anencephalic.

### Methods and results

The data were collected as part of the 1958 British Perinatal Mortality Survey and are described fully elsewhere.<sup>2</sup> In brief, factors relating to all 7117 stillbirths and neonatal deaths occurring in Britain during March, April, and May 1958 were compared with all 16 944 singleton deliveries in Britain during one week of March 1958. This second group served as the control population. Data collected included detailed information on the mother's smoking history. Social class codes were derived from the husband's occupation.

From the information collected we calculated the anencephalic incidence per 1000 births if the mother smoked at the start of pregnancy as 2.89 (SE 0.19), which was significantly greater than that found if the mother did not smoke (2.18 (SE 0.13);  $p < 0.05$ ). The table shows that there was some evidence for a trend with dose.

As in other studies, however, the incidence of anencephaly in this survey rose sharply as social class fell,<sup>3</sup> being 1.42 in classes I and II, 2.39 in social class III, and 3.16 in classes IV and V. The proportion of the control population of mothers smoking in early pregnancy also exhibited a trend with social class (32% in I and II, 41% in III, and 47% in IV and V). Indirect standardisation for each of the five social classes (table) resulted in no significant differences between the observed and expected numbers in each smoking group.