

Computer Aided Clinical Discrimination Between Non-Cirrhotic Portal Fibrosis and Cirrhosis.

Pages with reference to book, From 30 To 32

A.Koshy (Department of Hepatology, PGIME R, Chandigarh, India.)

Jayant V. Deshpande, C. M. Behl (Department of Mathematics, Punjab University, Chandigarh, india.)

Abstract

Thirty eight patients with Non-Cirrhotic Portal Fibrosis (NCPF) and 64 cirrhotics were included in the study. The diagnosis was established in all cases with liver biopsy and splenoportography. Age, sex, duration of symptoms, number of bleeds, ascites, hepatomegaly, splenomegaly, encephalopathy and presence of abdominal veins were used clinically to distinguish between the diseases. Age, number of bleeds, liver enlargement, encephalopathy and presence of abdominal veins were not significantly different between the two diseases. Computer aided discriminant analysis was used to determine the relative importance and weightage to be given in discrimination. NCPF and cirrhosis could be discriminated with 82% accuracy using splenic size and ascitic score. Use of all significant parameters resulted in only a marginal additional discrimination of 1% (JPMA: 30, 33 1983).

Introduction

Non-cirrhotic portal fibrosis is at present a well established disease entity (Datta and Bhagwat, 1981). Cirrhosis was clearly defined at the fifth Pan-American Congress in 1956 and recently modified by a working group of the World Health Organisation (Anthony et al., 1977). Several studies have brought out the clinical, biochemical, histological and haemodynamic differences between NCPF and cirrhosis (Sama et al., 1971). However no study has so far been attempted to determine the discriminant value of the clinical, biochemical or haemodynamic parameters. The present study demonstrates the discriminant values of the clinical parameters.

Material and Methods

Thirty eight consecutive proven cases of NCPF, sixty four consecutive proven cases of cirrhosis seen between 1979-1981 in the department of hepatology, PGI, Chandigarh were included for analysis. The diagnosis was confirmed after splenoportography and liver biopsy in all cases. The student 't' test was used to determine significant differences in age, number of bleeds and liver enlargement in centimeters below the costal margin (cms BCM). The Chi square test was used to determine significant differences in presence or absence of ascites, encephalopathy and abdominal veins. The computer programme for discriminant analysis was derived as described by Anderson (1972). The ascites was graded and arbitrarily scored as shown in table 1.

Table I
Ascitic Score (0–6)

Ascites	Major Bleed in last		
	< 1 month	1-3 months	> 3 months
1. Mild			
2. Moderate	2	3	4
3. Severe	3	4	5

If on diuretics for more than one week + 1.

If a person had a major upper G.I. bleed Within a month of examination and had just demonstrable but definite shifting dullness it was scored 1. If a person had no major bleed and fluid thrill on examination, it was scored 5. If the latter person had been on daily diuretics for more than a week, it was then scored 6.

Results

There was no significant difference in the age, number of bleeds and liver enlargement between NCPF and cirrhosis as shown in table II.

Table II

	Age	No. bleeds	Liver (cms BCM)
NCPF(M _± SD)	30 _± 9	1.1 _± 1.1	1.7 _± 2.4
Cirrhosis(M _± SD)	32 _± 17	0.6 _± 1.3	2.5 _± 2.7

All had P values of >0.05 by student t test

Neither was there any significant difference in encephalopathy and the presence of abdominal veins as shown in table III.

Table III

	Abd Veins Present/Total	Encephalopathy Present/Total
NCPF	14/38	1/38
Cirrhosis	30/64	8/64

Both had P values of >0.05 by Chi Square test.

The sex, duration of symptoms, splenomegaly and ascitic score were significantly different between the two groups (Table IV).

Table IV

	Sex (M :F)	Ascites Present/ Total	Duration of Symp- toms (Years + S.D.)	Spleno- megaly (cms + S.D)
NCPF	1 : 2	5/38	5.9+ 5.5	11.5+ 4.9
Cirrhosis	5 : 2	36/64	3.2+ 4.1	5.4+ 5.4
P Value	<0.001	<0.001	<0.01	<0.001

The discriminant function (X factor) for splenic size, ascites and duration of symptoms are given in Table V

Table V

Clinical Discrimination of NCPF (38) Vs. Cirrhosis (64)

O	Mean NCPF (M ₁)	Mean Cirrhosis (M ₂)	X Factor (F)	Difference (M ₁ -M ₂) F	Accuracy
1. Spleen size (Cms. BCM)	11.53	5.38	+0.002040	1.25	
2. Ascites	0.31	2.18	-0.005863	1.09	82.4%
3. Duration of Symptoms (years)	5.92	2.18	+0.000847	0.25	83.4%
Using 7 Parameters _____					83.4%
(+ Age, No. of Bleeds, Livers, Encephalopathy)					

size and ascitic score alone. The use of all 8 parameters, including the sex improved the accuracy of prediction by only 1%. Using the two parameters, splenic size and ascitic score the cut off was + 0.00995 and all values greater indicated NCPF and all lesser values cirrhosis.

DISCUSSION

Computer aided discrimination is being increasingly used in medicine to find the discriminant functions of different parameters which help to distinguish diseases. It has been used to distinguish cholesterol stones from pigment stones radiologically (Schwartz et al., 1982), Discriminant analysis between NCPF and cirrhosis based on haematologic and blood chemistry data was also attempted by Matsuda et al. (1979). We have found that application of such data to clinical features reveals that the extent of splenomegaly and development of ascites are the most distinguishing features between NCPF and cirrhosis. Apparently there is a greater reticuloendothelial hyperplasia in the spleen in NCPF. This may have etiopathogenetic implications.

The ascitic score rather than just the presence or absence of ascites was used because of the clinical observation of transient ascites in patients of both NCPF and extrahepatic portal vein obstruction. The one and three month cut off points have been arbitrarily selected. However the score so used appears to have very good discriminant function.

The use of the scoring system may help identify NCPF in areas where they are infrequently encountered by alerting the physician to the possibility. It may also help identify the patients who are most likely to withstand the stress of an unselective shunt, such as a conventional Lino-renal shunt.

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