NORMAL SHAPES OF LIVER: ANALYSIS OF NORMAL NUCLEAR SCANS IN MULTAN

Pages with reference to book, From 33 To 36

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Abstract

Five hundred 'Normal' liver scans were analysed to find out the incidence of various shapes of normal liver. There were differences between our series and the series reported in the of literature. The differences may be due criteria or geographical variation. JPMA 36: 33, 1986).

INTRODUCTION

The liver is the largest solid organ in the human body[1] .it is a pliable organ and is moulded by adjacent structures such as the right lung and right kidney. Supradiaphragmatic abscesses can flatten the top of the right lobe, or the dome the liver may move upwards as a result of splinting of the diaphragm or phrenic nerve paralysis. The liver exhibits many variations in shape on radionuclide scanning. The left lobe of the liver may be prominent, yielding a quadrilateral configuration or it may be so small that it cannot be seen. The porta hepatis may be prominent. The gallbladder may indent the inferior margin of the right lobe. The rib cage may indent the liver producing a linear defect[2-4] Riedel's lobe, a tojigue like downward projection of the right lobe may be felt as a mobile tumour in the right side of the abdomen and may be confused with other tumours in this area[5]. The objective of the present study was to find out the normal shapes of the liver in our area and compare our findings with those reported in the literature.

MATERIAL AND METHODS

Five hundred normal scans were included in this study. 'Normal' liver was defined as having a size of not more than 17 Cm in the maximñm vertical diameter as seen on scanning in an adult of average build. Gamma camera image of the liver which showed marked extension below the costal margin were not included. Scans showing splenomegaly, cold areas or a non.homogenous distribution of radiocolloid were excluded.

All scans were performed with Tc99m labelled tin colloid and 1.5 3 mCi (55.5 111 MBq) was injected intravenously and imaging commenced soon afterward. Only those scans were included where both the authors agreed on a liver shape.

There were 233 males and 267 females. The male to female ratio being 1:1.2. The ages ranged from 1 year to 96 years and the mean age was 40.6 years. The variants which were included were triangular, prominent left lobe, poorly developed left lobe and poorly developed inferior tip of the right lobe.

RESULTS AND DISCUSSION

The findings are given in table I and II.

Table I
Normal Shapes of Liver.

Liver Shape	No. of Patients	Percentage
Triangular	406	(81.2)
Prominent Left lobe	32	(6.4)
Prominent dome	24	(4.8)
Riedel's lobe	23	(4.6)
Poorly developed inferior tip of the right lobe	9	(1.8)
Poorly developed left lobe	4	(0.8)
Situs inversus	2	(0.4)

Table II
Indentations of the Liver Margins due to Adjacent Organs.

Type of Indentation	No.of Patients	Percentage
Rib Indentations	13	(2.6)
Prominent gallbladder Fossa	18	(3.6)
Prominent hilum	11	(2.2)
Concave inferior Border	34	(6.8)

6In the present study the predominant liver shape was triangular (8 1.2%), followed by prominent left lobe (6.4%), prominent dome of the right lobe (4.8%) and Riedel's lobe (4.6%). Two cases of situs inversus were also seen E0.4%). There were rib indentations in 13 cases (2.6%) and the inferior tip of the right lobe was poorly developed in 9 cases (1.8%); The comparison of present results with those of

Mc Afee et al. [6] are given in table-III.

Table III
Comparison of Findings of Present Study with those of Mc Afee et al.

Liver shape	Zahida et al.	Mc Afee et al.
Triangular liver shape	81.2%	65%
Prominent left lobe	6.4%	12%
Riedel's lobe	4.6%	5%
Prominent dome	4.8%	14%
Poorly developed inferior tip	1.8%	2%
Poorly developed left lobe	0.8%	13%

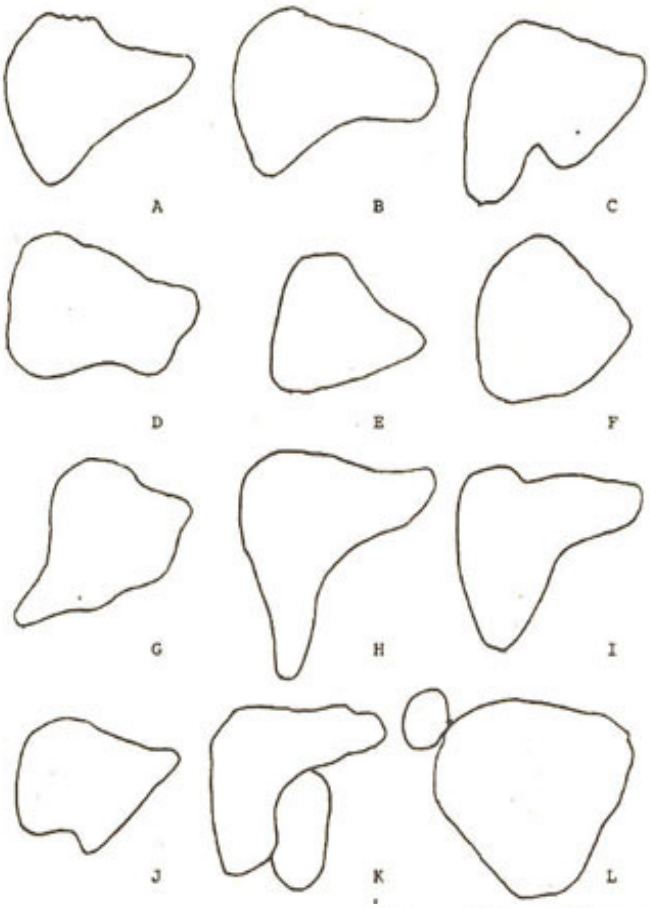
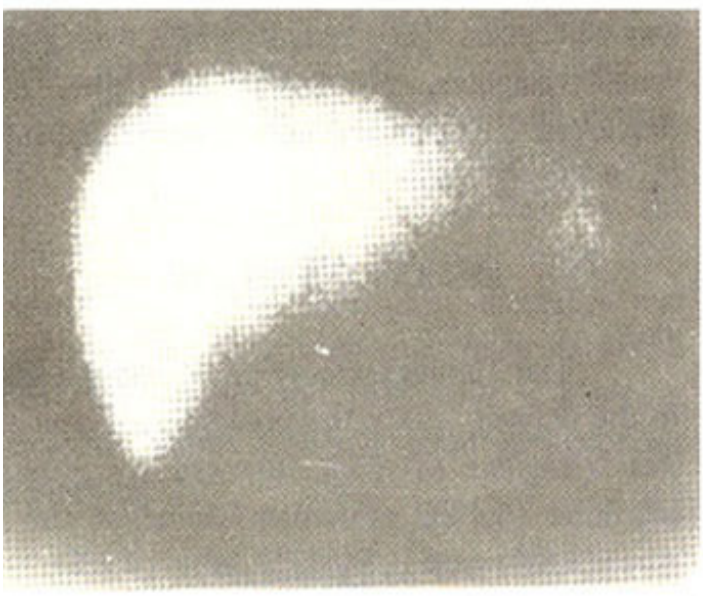


Figure 1. Line Drawings of various shapes of the liver.

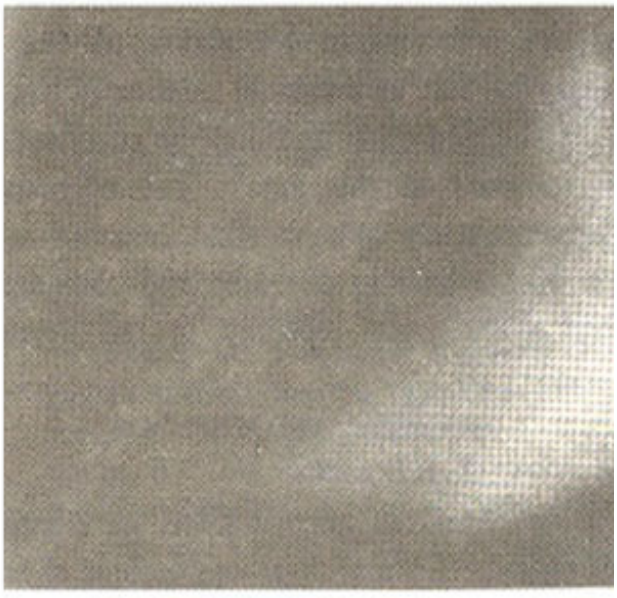
A,B and C, Triangular configuration seen in two third of normal persons.

A, Respiratory scalloping.
B, Concave inferior border.
C, Prominent umbilical notch.
D, Prominent left lobe.
E, Prominent dome with a high diaphragm.
F, Globular configuration with poor development of the left lobe.
G, Impression of ribs on lateral border.
H, Riedel's lobe
I, Localized upward bulging of the liver secondary to weakness of the diaphragm.
J, Notching or absence of the inferior tip.
K, Kidney Indentation of the inferior margin of the liver.
L, Interposition of the colon between the lateral abdominal wall and the liver.

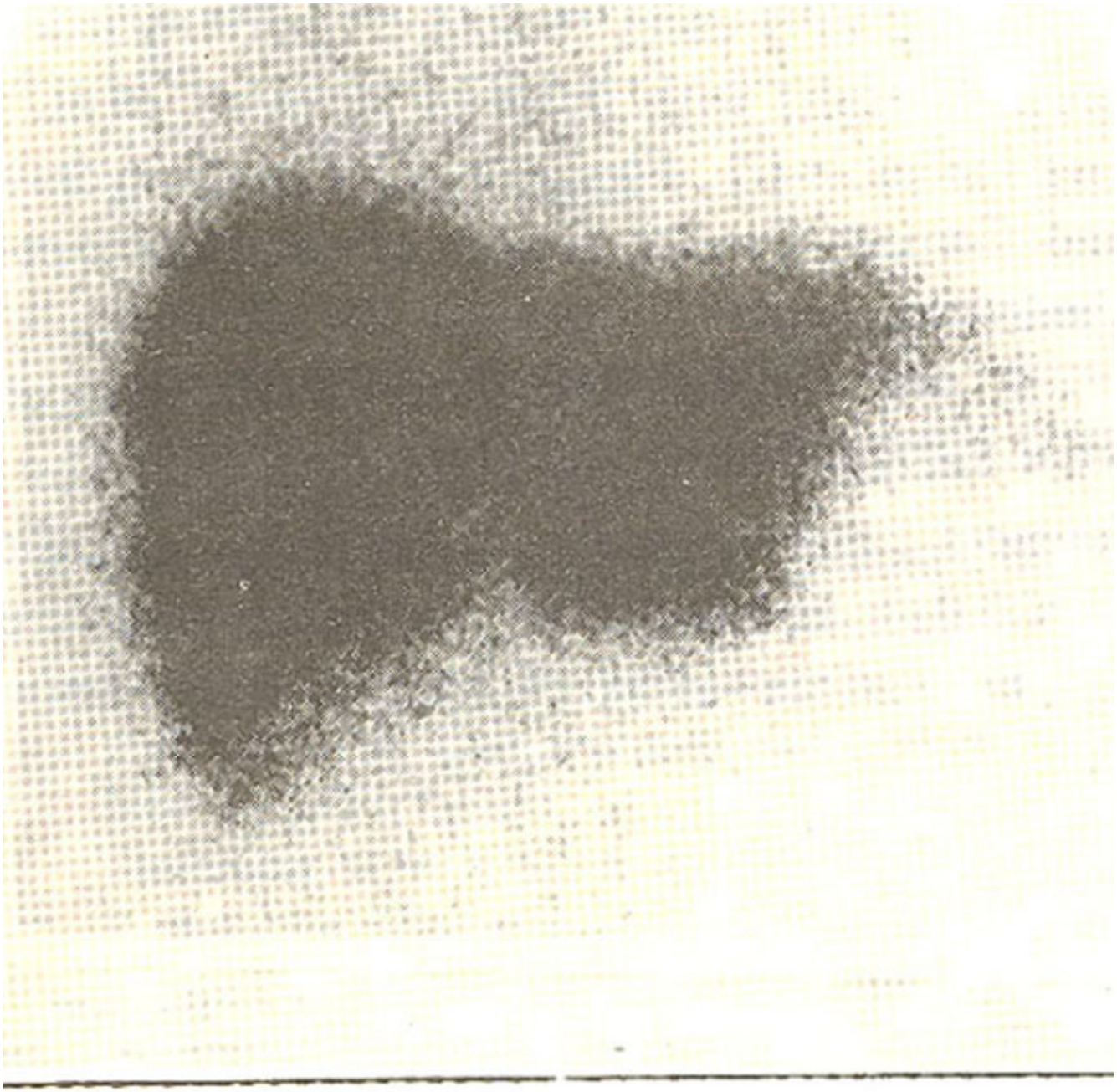
Figure 2 (a - e) Gamma Camera Images of the Liver.



a .Triangular

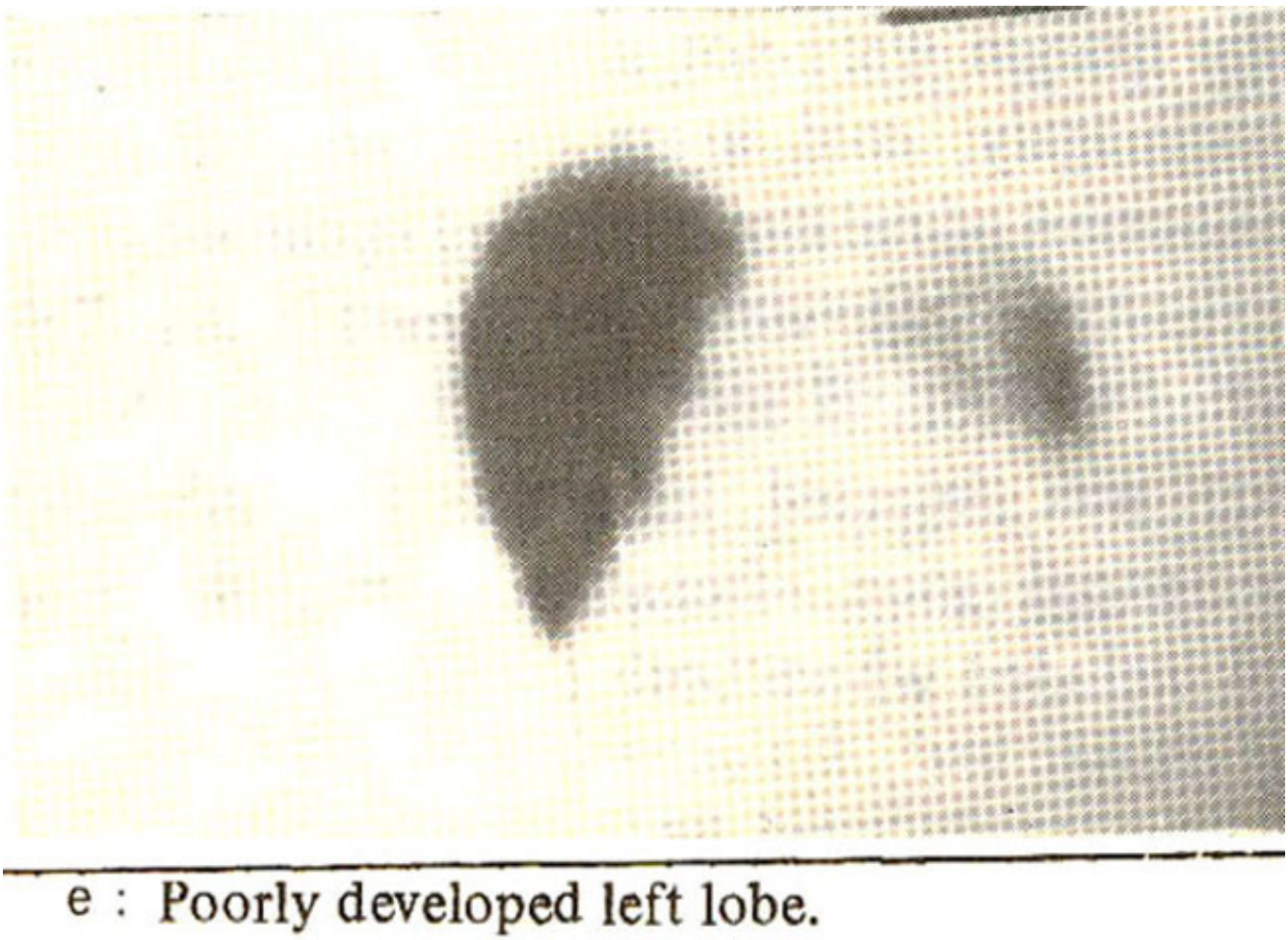


d: Riedel's lobe



b: Prominent left lobe

c: Prominent dome



e : Poorly developed left lobe.

Figures 1 & 2 show line drawing and Gamma Camera images of various shapes of the liver.

Our findings and those of Mc Afee et al. were analysed using the chi square test. The differences noted were statistically significant ($P < 0.01$). In one study[6], there was no difference in the surface areas of normal livers between caucasians and negroes. Our findings may be due to different selection criteria or interpretor's bias but it is also tempting to postulate a regional or racial variation. Similar studies in other areas of the country may be helpful.

Liver scan remains one of the most frequently requested investigation in our de. partment and scan findings frequently determine the course of the patients subsequent manage. ment, therefore knowledge of normal variants is essential for proper interpretation.

ACKNOWLEDGEMENT

Hafiz Ghulam Abbas, Senior Scientific Officer, Atomic Energy Medical Centre, Multan did the statistical analysis. Dr. Abdur Rauf Khan, M.D., FACP., of the Department of Nuclear Medicine, University of Buffalo, New York helped with the literature survey. Their help is gratefully acknowledged.

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