Medworld –asia International Publishers
Applied Physiology and Anatomy Digest [P ISSN: 2456 – 4095]
June 2018 (3) 01, 46 -49

Original research article:

Variations of Liver lobes: an Anatomical Study on Cadavers

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ABSTRACT

Background: Liver the largest abdominal viscera occupies most of the part of the right hypochondrium and extending into left hypochondrium in adults[1]. The liver develops in the third week of intrauterine life. It is a major storage centre for the absorbed food like proteins carbohydrates, fats etc.

Aim: Aim of our study is to find out the various types of liver lobes and anomalies.

Methods: Present study was conducted on 50 cadaveric livers obtained from the dissection in Department of Anatomy, Kamineni institute of medical sciences Narketpally, Nalgonda .

Results: Our observation shows out of 50 livers 30 livers (44%) were found to be anomalous, accessory lobes in 5 livers (11%), hypoplastic left lobe in 16 livers (26%), Very small left lobe in 1 livers (1.6%), absence of quadrate lobe in 2 livers (3%), accessory fissure in 3 livers (5%), Elongated left lobe with absent quadate lobe in 2 livers (3.3%).

Conclusion: knowledge of these variations is must for surgeons for planning any surgeries

Key Words: Anatomy, Additional lobes, Variations, Riedel's lobe.

INTRODUCTION

Liver the largest abdominal viscera occupies most of the part of the right hypochondrium and extending into left hypochondrium in adults[1]. The liver develops in the third week of intrauterine life. It is a major storage centre for the absorbed food like proteins carbohydrates, fats etc. Grossly the liver is divided into right, left, caudate and quadrate lobe[2]. The falciform ligament, divides the liver into a left and right lobe. From below, the two additional lobes are located between the right and left lobes, one in front of the other[3]. The anatomical divisions are on the basis of surface peritoneal and ligamentous attachments. The variations are mainly the irregularities in the lobes. Some of the uncommon liver anomalies include lobar atrophy or complete absence of a lobe of liver. Variations in liver lobes are a rare condition and appear to be due to excessive development and defective development of the liver. It is usually noted incidentally at autopsy or surgery. Accessory lobe is the Riedel's lobe which was first recognised as the anatomical variant of liver[4]. The accessory lobe is located below the liver, that can simulate tumors, i.e hepatocellular tumor, that developed in these accessory lobes[5]. The variants of other lobes are less recognised.

MATERIALS AND METHODS

The study was conducted in 50 adult human liver specimens collected from the department of anatomy Kamineni institute of medical sciences, Narketpally, Nalgonda. All the livers were dissected during dissection classes for 1st year medical students. Average age of cadavers ranging from 30-65yrs over a period of 5 years. Variations of liver lobes most common in males than in females. Liver cirrhosis, fatty liver and other diseases of liver were excluded. Livers with normal parenchyma were included in the study

RESULT

The variation of liver in various forms lobar anomaly, accessory fissure, accessory lobe and absence of lobe. Out of 50 cadaveric livers 30 livers (44%) were found to be anomalous, accessory lobes in 5 livers (11%), hypoplastic left lobe in 16 livers (26%), Very small left lobe in 1 livers (1.6%), absence of quadrate lobe in 2 livers (3%), accessory fissure in 3 livers (5%), Elongated left lobe with absent quadate lobe in 2 livers (3.3%) Hypoplasia of left lobe of the liver is defined as the absence of liver tissue on the left side of liver without previous disease or surgery. It is an incidental finding revealed by imaging exams or during abdominal surgery. The left lobe of the liver was seen to be very small and separated from the right lobe by a well defined fissures. Table 2

Table 1 **Number of livers and their percentages**

Normal liver	20(23.0)
Abnormal liver	30 (45%)
Total	50 (50.0)

Table 2 Types of Abnormal Liver Lobes

SNO	TYPE OF ABNORMAL LIVER LOBES	NUMBER OF CADAVERIC LIVERS	PERCENTAGE
1	Accessory lobes	05	11%
2	Hypoplastic left lobe	16	26%
3	Very small left lobe	01	1.6%
4	Absence of quadrate lobe	02	3%
5	accessory fissure	03	5%
6	Elongated left lobe with absent quadate lobe	02	3.3%

Out of 30 abnormal liver lobes, we observed variations of liver lobes most common in males than in females (Table 2) and left liver lobe mostly affected than right lobe.

Table 3 Distribution of anamoly of liver lobes

Distribution of anamoly of liver lobes (n=25)	
Gender	Frequency (%)
Male	25(45.0)
Female	05 (5%)
Total	30 (30.0)

DISCUSSION

Most of the congenital Liver anomalies are either due to defective or excess development[6].

Anomalies are classified as agenesis, aplasia and hypoplasia. Among these lobar abnormalities, accessory lobes carry a risk of torsion[7]. Usually the accessory lobe is uncommon and asymptomatic, and is usually found during laparotomy. In our study of 50 livers Accessory lobes were present in 5% and accessory fissure was found in 3% cases. Accessory fissures are found on antero superior surface of liver, which can be misdiagnosed in imaging techniques[7]. If fluid is collected in accessory fissure can be a misinterpretation for a cyst, abscess or hematoma. Absence of liver lobe affects the left lobe more than right lobe[9]. Hypoplastic left lobe and the accessory caudate lobe are quite rare. Drakshayini et al noted liver with tongue like protrusion of left lobe of liver[10]. Singh et al noticed oblique fissure with a hypoplastic left lobe of liver[11].

Pujari et al also reported accessory lobes in their study[12]. Defective development of left lobe can give rise to gastric volvulus. In our study it was found that hypoplastic left lobe was the commonest anomaly.

Other abnormalities were accessory lobes, accessory fissure, elongation of left lobe, absence of quadrate lobe and very small left lobe.

CONCLUSION

As a whole the variations of liver lobes found in our study are unnoticed and being asymptomatic. Possibilities of these variations must always be kept in mind before planning hepatobiliary surgeries. The knowledge of various liver variants are important for anatomists, surgeons and imaging specialists.

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