



ORIGINAL RESEARCH PAPER

Anatomy

THE UNUSUAL FISSURES IN THE LOBES OF LIVER- A HOLISTIC APPROACH

KEY WORDS: Liver, lobes, unusual fissures, cadaver, dissection

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ABSTRACT

Perception regarding the presence of unusual fissures and accessory lobes in the human liver is of paramount importance to the Hepatobiliary surgeons, Radiologists or Forensic experts as they can be a source of error for pathologic liver nodule or echogenic liver lesions or lacerations. The etiology may be due to invagination of the diaphragm or developmental or genetical. Their number increases with age. The present study is aimed to determine the unusual fissures occurring in different lobes of the liver and to compare with other studies. 62 liver specimens obtained by routine cadaveric dissections for the past ten years were examined for the unusual fissures. 28 liver specimens from the study exhibited unusual fissures distributed in various lobes (45.16%). The maximum number of livers possessing fissures in right lobe was 14, in which a liver had 4 unusual fissures in the right lobe. Fissures were seen in quadrate lobe of 7 liver specimens, where a complete fissure dividing the quadrate lobe was identified in a specimen. Caudate lobe exhibited unusual fissures in 4 specimens and left lobe had fissures in 3 liver specimens. The results correlated with authors of previous studies when comparing each individual parameter. The present study provides an insight into the knowledge regarding the presence of unusual fissures in different lobes of the liver which is hardly available in the textbooks.

INTRODUCTION

Liver is the largest gland of the digestive system occupying upto five upper abdominal quadrants on the right side. The major fissures like ligamentum teres, ligamentum venosum and fossa for gall bladder arbitrarily divide the liver into segments. The occurrence of unusual or abnormal fissures is a great source of artefact for Radiologists as they may be mistaken for echogenic lesions. YH Auh^[1] described the occurrence of abnormal fissures in the liver through CT scan was 25%. Accessory fissures can be markers of hepatic "weak zones" which are the areas with low vascularisation^[2]. A case report has been studied in detail^[3] correlating the clinical implications associated with accessory fissures. The accessory fissures accompany other morphological variations. Patil^[4] described the Netter's six types of liver variations. Singh et al^[5], Sunitha et al^[6], Cawich et al^[7], Joshi et al^[8] presented extensively on the morphological variations of liver in their research. The prevalence of unusual fissures has been found to be associated with diaphragmatic muscle contraction. The number of fissures has been found to increase with age. They are asymptomatic. The present study is done on the liver specimens to study the occurrence of abnormal fissures in different liver lobes.

MATERIALS & METHODS

The adult liver specimens obtained during routine cadaveric dissection for the past ten years from 2005 till date were examined. Broken, smashed, damaged specimens were discarded. 62 liver specimens were studied. Photographs were taken. The results were graphically represented and compared with other studies.

RESULTS

Out of 62 specimens, 28 (45.16%) showed fissures in various lobes of the liver. Highest number of fissures was observed in the right lobe, followed by quadrate lobe, caudate lobe and least in the left lobe. The results are depicted as follows.

Graph 1: Graph showing the number and % of liver specimens with fissures in various lobes.

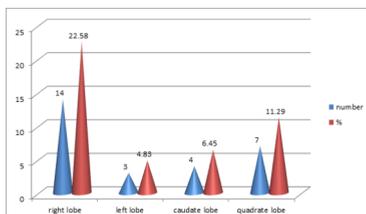


Table 1: Comparison with other studies from the past

S No	Authors from the past	% unusual fissures
1.	Ono ML - 2000	11.9
2.	Veronica Macchi - 2003	40
3.	Faizah B Othman - 2008	5
4.	B Senthil kumar - 2012	18
5.	Hussein Muktyaz - 2013	12.10
6.	Sunitha Vinnakota - 2013	53.44
7.	Sateesha Nayak B-2013	1.81
8.	Khedekar - 2014	42%
9.	Satish Jain- 2015	36.10
10.	S.Saritha- 2015	30
11.	Shamir O Cawich- 2016	12
12.	T.Sreekanth-2016	31.10
13.	Singh-2019	81.4
14.	Present study-2019	45.16

Graph 2: Prevalence of unusual fissures in various lobes of liver from different studies

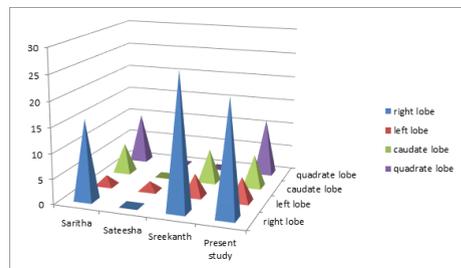


Fig 1: unusual fissures in the right lobe of the specimens



Fig 2: unusual fissures in the left lobe of the liver specimens



Fig 3: unusual fissures in the caudate lobe of the liver specimens

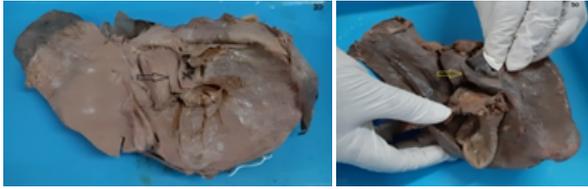


Fig 4: unusual fissures in the quadrate lobe of the liver specimens



DISCUSSION

The presence of unusual fissures along with the normal fissures may be asymptomatic but can be source of error for Radiologists while performing CT scans, for Forensic experts as they may be mistaken as lacerations. The number of fissures is found to increase with age. Most commonly the unusual fissures were seen on the right lobe of liver. The present study describes in detail about the presence of unusual fissures in different lobes of the liver specimens. Highest number of fissures was found on the right lobe where a liver exhibited four fissures on the right lobe. The study compared with the values from previous authors. Faizah^[9] reported 5% prevalence of unusual fissures, Sateesha^[9] concluded 1.81% , Satish Jain^[10] described 36.10% and Shamir^[11] illustrated 12% in their studies. The total number of unusual fissures from the present study was 45.16% which was close to the study made by V Macchi etal and Khedekar etal^[12] The percentage of fissures on the right lobe was 22.58% and in the left lobe was 4.83% which correlated with the study made by Sreekanth^[13]. The unusual fissures in caudate lobe were 6.45% and quadrate lobe was 11.29% which corresponded with observations made by Saritha etal^[14]. In all the previous studies, the occurrence of unusual fissures was most common in right lobe which was the same with the present study also. The next common prevalence of unusual fissures occurred in quadrate lobe followed by caudate lobe and left lobe respectively. These findings correlated with the study made by Saritha^[14]. The present study illustrates the recent observations on the occurrence of unusual fissures in different lobes of the liver specimens from north coastal Andhra Pradesh which has a clinical significance.

CONCLUSION

The unusual fissures are seen in the different lobes of liver specimens, most commonly in right lobe followed by quadrate, caudate and left lobes respectively. The study reports the recent data from the region of north coastal Andhra Pradesh. The knowledge regarding the occurrence of abnormal fissures is necessary to understand their prevalence as a source of error in diagnosing various clinical conditions.

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