VARIATIONS IN SPLENIC NOTCHES AND FISSURES: STUDY WITH CLINICAL IMPORTANCE

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ABSTRACT

The objective of the study had been to note the presence of notches and fissures in 60 spleens. The study was done on 60 spleens of both sexes obtained from autopsy of dead bodies in the Department of Forensic Medicine and variations noted in the Department of Anatomy. Notches were observed on the upper border in 51 samples (85%) and on the lower border in 5 samples (8.33%). 6.67% of the spleen samples presented with fissures on the upper border and lower border each. Notches and fissures are quite a common occurrence in spleen. Notches on superior border are clinically significant as they assist in palpation of spleen during splenomegaly. Information of notches and fissures on the lower border of spleen are important during splenic surgeries and radiological investigations. In the present study; the notches and fissures have been noted on the 60 spleen samples.

KEY WORDS: Spleen, Notch, Fissure, Superior Border, Splenomegaly.

INTRODUCTION

The spleen, the largest unit of lymphoid tissue in the body is a soft, purple organ about the size of a fist in the left hypochondrium. It is shaped like the segment of an orange [1]. Two surfaces can be usually recognized, a convex diaphragmatic surface and a visceral surface. The visceral surface has concave gastric and renal impressions and a flat colic impression. The upper or anterior border between the gastric impression and diaphragmatic surface is sharp and well defined, except where it is well interrupted by notches. The lower or posterior border separates the diaphragmatic surface and the renal impression while the lateral end intervenes between the diaphragmatic surface and the colic impression [2].

Exaggeration of the notches along the anterior border of the spleen, sometimes with occurrence of notches also along the posterior border has been described as forming a lobulated spleen and regarded as an anomaly [3].

Spleen lies just beneath the left half of the diaphragm close to the 9th, 10th and 11th ribs [4]. The spleen develops as a collection of mesenchymal cells in the dorsal mesogastrium. Some of these cells are contributed by the coelomic epithelium lining the mesogastrium [5].

The spleen is lobulated in the fetus, but the
lobules normally disappear before birth. The notches in the superior border of the adult spleen are remnants of the grooves that separated the fetal lobules [6]. Although the lobules are not of clinical importance to the patient, but the lobules are confused as a mass originating from the left kidney by the radiologists [7].

**MATERIALS AND METHODS**

The present study was done on 60 spleens obtained from the dead bodies in mortuary in the Department of Forensic Medicine. The samples were carefully noted for the presence of notches and fissures. Notches are smaller in the length and cut either upper border or lower border and the diaphragmatic surface while fissures have a longer length and reach till the intermediate border. After the required work the specimens were photographed.

**RESULTS**

**Number of notches on upper border of spleen** (Refer to Table 1 and 2)

<table>
<thead>
<tr>
<th>Total number of spleen</th>
<th>Spleen without notch</th>
<th>Spleen with notches on upper border</th>
<th>Spleen with notch on inferior border</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>9</td>
<td>51</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 2:** Showing the Notches on the upper border of spleen.

<table>
<thead>
<tr>
<th>Number of spleen</th>
<th>Notches on the upper border of spleen</th>
<th>Notch on the lower border</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

so; 44 spleens out of 60 (73.33%) had 1-3 notches on the upper border and a total of 51 spleen samples out of 60(85%) had notches on upper border.

**Number of notches on the lower border of spleen** (Refer to table 1 and 2): 5 spleens out of 60 specimens (8.33%) presented with single notch on the lower border.

**Fissures on upper borders:** We found 1 spleen with single fissure and 2 spleens with two fissures on the upper border and 1 spleen with 3 fissures on upper border. A total of 6.67% had fissures on upper border

We found 4 spleens (6.67%) with single fissure on lower border

**DISCUSSION**

Morphologically, the notches along the borders of spleen are very variably present in different animals. The spleen in carnivores is large with notch on all the borders whereas spleen is less notched in arthropods [8].

In a study done by Das et al [9] on 100 human...
spleens; in 98% cases; they found a notch on the superior border and in 2% cases they found a notch on the lower border. They found a specimen that did not exhibit notch on the superior border. In 2% cases.; they found notches that continued into fissures. They also found a notch on the intermediate border in 2 specimens. Hussein et al [10] studied variations in 32 cadavers and found that in 3 spleens multiple notches were present on the superior border of spleen, 4 spleens presented deep notches on the inferior border, 2 spleens showed deep notches on medial border, 2 spleens had shape similar to liver. In a study done by Nayak et al [11] only 50% of the splenic notches were found on the superior margin. The splenic notches on the superior margin were seen in 78.6% cases by Skandalakes et al [12], 70% by Soyluolu et al [13] and 95% cases by Ungor et al [14] respectively and in our study we found splenic notches on superior margin in 85% cases. In computed tomographic study on congenital anomalies of spleen Gayer et al [15] noted that occasionally the notches or clefts on the superior border of the adult spleen were sharp and extended deep up to 2-3 cm. Gandhi et al [16] reported a spleen with six notches on its superior border, one notch on the broad anterior pole and a 2.8 cm long fissure seen on the renal visceral surface of the spleen. Rayhan et al [17] studied 70 spleens and found that notches were present on upper border of spleen in 88.57% of cases and lower border of spleen in 27.14% cases. In our study; notches on upper border in 85% cases and notches on lower border in 8.33% cases.

CONCLUSION

In the present study, 51(85%) spleen specimens showed notches on upper border and 5(8.33%) spleens showed notch on the inferior border. 9 spleen specimens were without any notches. 4 spleen specimens(6.67%) had fissures on the upper border and 4 spleens(6.67%) had fissures on the lower border.

Conflicts of Interests: None

REFERENCES


How to cite this article: Bhumica Dang, Vivek Singh Malik, Sanjay Gupta, Sudha Chhabra. VARIATIONS IN SPLENIC NOTCHES AND FISSURES: STUDY WITH CLINICAL IMPORTANCE. Int J Anat Res 2018;6(1.1):4803-4805. DOI: 10.16965/ijar.2017.468