Original Article

Evaluation of the Causes of Abdominal Right Upper Quadrant Pain using Ultrasound

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ABSTRACT

The outermost upper quadrant at the right side of the abdomen is right upper quadrant, also acknowledged as epigastrium. Objective: To evaluate of the causes of abdominal right upper quadrant pain using ultrasound. Methods: This was a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan from January 2022 to March 2022. The information required for this study was collected by using ultrasound equipment TOSHIBA XARIO 100 having probe frequency of 3.5Hz. A sample size of 70 patients was considered having abdominal pain in the right upper quadrant. The data were entered and analyzed using SPSS version 20.0. Results: Highest frequency of RUQ pain was shown in more than 45 years in females 47 (67.1%). The most common diagnosis of patients with RUQ pain was fatty liver disease 27 (38.6%) followed by 11(15.7%). Conclusion: Ultrasound is the gold standard modality for diagnosing abdominal organs diseases as it is a cheap, non-invasive and fast modality. Most common diseases diagnosing in patients with RUQ pain is fatty liver (38.6%) in old females (67.1%).

INTRODUCTION

The outermost upper quadrant at the right side of the abdomen is Right Upper Quadrant, also acknowledged as Epigastrium [1-3]. Right Upper Quadrant abbreviated as RUQ outstretched from umbilical plane at the right side to right ribcage [4]. Right upper quadrant (RUQ) accommodate organs that are liver, gall bladder, biliary track, head of pancreas, and right kidney. Epigastric or RUQ pain is most common presenting problem in hospital settings [5]. In patients with right upper quadrant (RUQ) pain, imaging plays a vital role in diagnosis [6]. The first line choice of modality for the assessment of pain is ultrasound. To locate the cause of pain and early diagnosis is essential for proper treatment [7,8]. The differential diagnosis for pain in RUQ includes hepatic diseases, acute hepatitis, fatty liver disease, G.B stones, Cholecystitis, pancreatitis, renal disorders, right Hydronephrosis, and renal parenchymal lesions [9-11]. Pathologies involving liver include hepatitis, a condition of inflammation of liver, categorized as acute or chronic [10,12]. Fatty liver disease is a condition involving deposition of extra fat in the liver. Hepatitis involves inflammation of liver [13]. Pathologies of gall bladder involves stones that are hard deposits and clog the cystic duct [14]. A cute cholecystitis involves abrupt inflammation of gall bladder. Pancreatitis, a condition having inflammation of pancreas [15]. Hydronephrosis is a condition in which urine is unable to drain from kidneys.
causing dilatation or swelling of calices or renal pelvis [16,17]. Renal stones, also called Urolithiasis are hard structures and are made up of salt and minerals [18,19]. Fluid filled sacs in the kidneys are called renal cysts. These cysts can be simple and complex [20,21]. Ultrasound in the front-line imaging modality used in modern medicine due to its vast availability. It provides quick, real-time and dynamic imaging techniques [22,23]. It is non-invasive, painless imaging modality that uses non-ionizing radiations which causes no harmful effects on the human body. Ultrasound can be escorted to the patient’s bedside and it provides expeditious information [24,25]. This study showed the assessment of patients presenting with pain in right upper quadrant. The best modality for diagnosing pain in RUQ is ultrasound. Ultrasound is widely used due to its advantages as it is cheap, fast, and non-invasive. It contains no harms so it can be performed at any age.

METHO DS
This was a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan from January 2022 to March 2022. The information required for this study was collected by using ultrasound equipment TOSHIBA XARIO 100 having probe frequency of 3.5Hz. This study included patients who presents with RUQ pain while pregnant females are excluded. A sample size of 70 patients has considered from a previous published article. The data were entered and analyzed using SPSS version 20.0.

RESULTS
This is a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan. The study was organized over a period of three months from January 2022 to March 2022. Table 1 shows age group of respondents categorized as 0-15years 4(5.7%), 16-30 years 17(24.3%), 31-45 24(34.3%) and more than 45 were 25(35.7%). It demonstrates that the highest frequency of right upper quadrant pain is shown in age group of more than 45 years while least frequency is between 0-15 years.

Table 1: Age Group of Respondents

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>16-30</td>
<td>17</td>
<td>24.3</td>
</tr>
<tr>
<td>31-45</td>
<td>24</td>
<td>34.3</td>
</tr>
<tr>
<td>More than 45</td>
<td>25</td>
<td>35.7</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Gender of Respondents

Table 2 shows gender of respondents which demonstrate that females 47(67.1%) are more common to develop right upper quadrant pain then males 23(32.9%).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>47</td>
<td>67.1</td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>32.9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3: Pain Duration of Respondents

Table 3 shows pain duration of respondents which demonstrates that pain in RUQ is more common in duration of less than 1 month 41(58.6%) following by less than 12months 11(15.7%).

<table>
<thead>
<tr>
<th>Pain Duration</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 month</td>
<td>41</td>
<td>58.6</td>
</tr>
<tr>
<td>Less than 6 months</td>
<td>18</td>
<td>25.7</td>
</tr>
<tr>
<td>Less than 12 months</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4: Ultrasound findings of Respondents

Table 4 shows ultrasound findings of patients’ presenting with RUQ pain. The most common diagnosis of patients with RUQ pain was fatty liver disease 27(38.6%), followed by hepatitis 2(2.9%), Cholelithiasis 11(15.7%), cholecystitis 2(2.9%), right renal stone 11(15.7%), right renal cyst 1(1.4%), right renal hydronephrosis 7(10.0%), pancreatitis 3(4.3%), normal USG findings 6(8.6%).

DISCUSSION
It was a descriptive cross-sectional analysis conducted at private medical setup of Gujranwala, Pakistan. Information required for this study was collected from TOSHIBA XARIO 100 with use of probe having frequency of 3.5Hz. This study included patients who presented with RUQ pain while pregnant females are excluded. The outermost upper quadrant at the right side of the abdomen is Right Upper Quadrant, also acknowledged as Epigastrium. The current study evaluates the causes of pain in right upper quadrant (RUQ) which concluded that the highest frequency of age was in more than 45years 25(35.7%) in females. Fatty liver was one of the most dominant diseases in patient’s presenting with RUQ pain. A study carried at Khartoum state in 2016 by Elnair also concluded that RUQ pain can lead to different diseases including gall bladder stones, and fatty liver while the current study also included that fatty liver can cause RUQ pain [26]. The current study was done by using ultrasound; it is a safe, easily available and cheap tool for diagnosing pathologies of abdomen. In 2011, Krishnan also found that ultrasound is the best modality for diagnosing diseases in patients presenting with RUQ pain.
It contains non-ionizing radiations that are safe for the patients and cause no harm. It is a cheap, fast, portable and safe tool for evaluation of different organs of abdomen. A similar study was done by Revzin in 2017 also concluding that ultrasound is the first line modality for diagnosing diseases of RUQ in patients having symptom of pain.

CONCLUSION
Ultrasound is the gold standard modality for diagnosing abdominal organs diseases as it is a cheap, non-invasive and fast modality. Most common diseases diagnosing in patients with RUQ pain was fatty liver (38.6%), Cholelithiasis and right renal stone was (15.7%).

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