Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

ROLE OF COMPUTED TOMOGRAPHY IN THE DIAGNOSIS OF ACUTE ABDOMEN PAIN

Muhammad Nauman Saleem*
Senior Lecturer, Faculty of Allied Health Sciences, Rashid Latif Khan University Lahore, Pakistan
ORCID: https://orcid.org/0000-0003-2786-4637 Email: naumansaleem72@gmail.com
Mohammed Tayeb Abdo Saeed
BS radiology technology, Azak university of human development, Yeman
Samina Nisar
Master of Sciences in Diagnostic Ultrasound, Department of Radiography & Imaging Technology, Faculty of Professional Health Technologies, Green International University
Maheen Mirza
Demonstrator, school of health sciences, University of Management & Technology
Hamna Shakeel
Bs hons medical imaging technology, University of health sciences, Lahore
Noor Fatima
Master of Sciences in Diagnostic Ultrasound, University Institute of Radiological Sciences and Medical Imaging Technologies (UIRSMIT) Faculty of Allied Health Sciences (FAHS), The University of Lahore, Lahore, Pakistan
Anmol Arif
Lecturer Faculty of Allied Health Sciences, Rashid Latif Khan University Lahore, Pakistan

Author Details

Keywords:
Abdomen pain, Right Hypochondriac Region, Cholelithiasis, Acute Hepatitis, Inflammation.

Received on 19 Feb, 2026
Accepted on 29 March, 2026
Published on 14 April, 2026

Corresponding E-mails & Authors*:
Muhammad Nauman Saleem
naumansaleem72@gmail.com

Abstract

Background: Computed tomography is the essential imaging methodology of decision for introductory evaluation and fills in as a practical and dynamic methodology to give a conclusive finding. Various systems of organs are incorporated at standard Abdomen CT, and an assortment of computed tomographically diagnosable infection cycles can be recognized, including states of hepatic, pancreatic, adrenal, renal, gastrointestinal, vascular, and pelvic, all of which may bring about abdomen torment and pain. Most

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

common causes, however, incorporate acute hepatitis and issues with gall bladder such as cholelithiasis as reported in existing literature

Objective(s): The present study was thus conducted to evaluate the role of Computed tomography in diagnose of acute abdominal diseases

Methodology:: This study was based on a non-descriptive study design conducted at DHQ hospital Okara in Pakistan. One hundred and sixty nine patients (N=169 M/F) having an active history of abdomen pain were included in the study. CT findings of all these patients was assessed and data was recorded regarding the cause of abdomen pain. Patients with accidental history including inflammation, rib fracture or with conditions not visual sable on ultrasound were not incorporated in the study

Results: In this descriptive study through Convenient sampling technique, we have selected total 169 patients in which 102 patients was females and 67 was male, the minimum age of the patients included in the study was about 20 and maximum age was around 84. Out of 169 patients 43 patients pain in left lower quadrant, 81 experiences pain in right upper quadrant, patients with left upper quadrant pain was 25 and lower left quadrant patients presenting with pain was 20. There was 95 patients who experiences general abdomen patients out of 169 patients and patients with sharp stabbing pain was 59 and 15 patients presented with sensitive to touch. Cholelithiasis was the highest, present in 24.3% patients followed by acute appendicitis (19.5%), small bowl obstruction 15.4% and acute pancreatitis 13.6 %. Other recorded causes included kidney stone in 16 patients about 9.5%, acute splenomegaly and acute biliary colic both was present in 4.1% patients. Other non-significant causes included acute diverticulitis and acute bowl obstruction 3.6% both, and patients with acute hemoperitionium was 2.4%

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

Conclusion: In our study conclusion, the causes of abdominal pain is significant entity in endemic areas, and this may present as cholelithiasis, hepatic hemangioma, and right renal cyst. Although in some cases non-significant causes included small bowl obstuction, kidney stone and acute appendicits are causes pain. CT seems to be an important diagnostic modelity in both the diagnosis and follow-up of abdomen pain and it may provide a faster, easier method of diagnosis.

INTRODUCTION

One of the most common reasons for presenting to the emergency department is the sudden onset of severe abdominal pain that necessitates immediate medical attention, also known as "the acute abdomen" (ED). [1]Acute abdominal pain is a common dominant complaint in emergency department (ED) patients and can be associated with a variety of diagnoses. Approximately 4 to 5% of patients who present to the emergency department with acute abdominal painin USA. Acute abdomen patients are extremely ill, with abdominal tenderness and rigidity.[2]

Acute cholecystitis is a group term for acute abdominal pain that most often manifests as right upper quadrant pain. Acute cholecystitis is a clinical diagnosis that requires a thorough history and physical examination, laboratory tests, and radiologic examination. Pancreatitis is the cause of acute abdominal pain in patients who present to the emergency department. Two of three features are required for the clinical diagnosis of acute pancreatitis: Epigastria pain increased serum lipase to three times normal levels and was associated with imaging findings. The systemic inflammatory response syndrome is to blame. Pancreatic parenchymal necrosis is diagnosed when portions of the pancreas lack enhancement and should be defined as 30%, 30%-50%, or >50% of the gland. Small-bowel obstruction (SBO) patients typically present with nausea and vomiting, as well as a distended abdomen.[3]

Postoperative adhesions are the most common cause of bowel obstruction, followed by hernias and cancer, and they may also be the source of pain. Treatment in the late phase (after the first week) is determined by the occurrence of pancreatitis symptoms or complications, and is frequently based on imaging findings such as pancreatic necrosis, fluid collections, and pseudoaneurysms. 15 Nonetheless, abdominal pain with vomiting blood, bloody stools, dizziness, abdominal distention, fainting, shortness of breath, or skin yellowing (jaundice) can be a sign of a serious, potentially life-threatening condition

Vol. 5 No. 2 (2026)
Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about
Online ISSN 3007-2387
Print ISSN 3007-2379
Saleem et al - 2026
DOI: http://doi.org/10.5281/zenodo.19569071

that should be evaluated immediately in an emergency setting.[4] Helicobacter pylori bacteria and nonsteroidal anti-inflammatory drugs are the most common causes of peptic ulcer disease (PUD).

Ulcer disease manifests itself in two ways: directly (focal out pouching and mucosal enhancement defects) and indirectly (edoema, wall thickening, and adjacent soft tissue stranding). 22 Duodenal ulcers and marginal ulcers at a gastrojejunostomy are more difficult to detect and necessitate a high index of suspicion. CT can easily detect PUD-related perforation; gastric ulcers typically cause pneumoperitoneum, whereas duodenal ulcers may cause intraperitoneal or retroperitoneal air depending on the site of perforation. Furthermore, evaluating a patient with acute abdominal pain necessitates a thorough understanding of the anatomy of that region as well as the physiology of proximal and remote organ systems.

Disorders of the abdominal organs can cause symptoms such as vague abdominal and flank pain radiating to the back and groyne region, low-grade fever caused by an acute condition, vomiting and nausea due to the presence of gallstones and inflammation, digestion problems in patients with conditions such as fatty liver, and frequent, painful urination. In many cases of abdominal pain, a careful history and physical examination are performed to aid and guide the workup.[5] However, the signs and symptoms of the various conditions that cause abdominal pain frequently overlap in different patients.

The differential diagnosis for acute abdomen is broad. Cholecystitis should be considered in patients with right upper quadrant pain. The presence of generalised abdominal pain should raise the possibility of bowel obstruction and mesenteric ischemia. While a quadrant-based differential diagnosis may be helpful, specific abnormalities may manifest with nonspecific symptoms, necessitating a careful search pattern on CT imaging. CT can provide a thorough examination of the abdomen and pelvis. It is now widely regarded as the imaging technique of choice for the vast majority of patients who present with an acute abdomen. The limitations of plain film radiography and ultrasound, as well as the introduction of multidetector CT (MDCT), have made this possible. MDCT systems have enabled greater volume coverage and thinner slice acquisition while reducing radiation problems significantly. Ultrasound has some advantages over CT, such as the absence of ionising radiation, and is the preferred investigation in certain situations.

These people were candidates for surgery prior to the widespread use of imaging. However, given the current role of imaging, some patients with acute abdomen avoid surgery. In the diagnostic work-up of patients with acute abdominal pain, conventional radiography, ultrasonography (US),[6] and computed

Vol. 5 No. 2 (2026)
Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about
Online ISSN 3007-2387
Print ISSN 3007-2379
Saleem et al - 2026
DOI: http://doi.org/10.5281/zenodo.19569071

tomography (CT) are commonly used. Precision values for conventional radiography in patients with acute abdominal pain are poor, with an accuracy of 53% reported. CT yields clearly higher accuracy values when compared to conventional radiography. There are numerous possible explanations.

Plain abdominal radiography has no diagnostic value in patients suspected of having acute appendicitis. The plain radiograph has no role in the investigation of patients with suspected appendicitis. Despite this, plain radiography is performed on 50-75 percent of patients with suspected appendicitis. Both ultrasound and computed tomography (CT) play important roles in the diagnosis of acute appendicitis. CT is more accurate. It is the most commonly used imaging technique.[7]

In children and women of childbearing age, ultrasound is the primary imaging technique. In pregnant patients with an inconclusive ultrasound examination, MRI may be helpful in the diagnosis of acute appendicitis. Although ultrasound, CT, MRI, or nuclear scintigraphy can be used to confirm cholecystitis, the ACR appropriateness standards list ultrasound as the most appropriate initial imaging in a patient with suspected acute cholecystitis. Abdominal radiography has traditionally been the first imaging test performed on patients with suspected SBO; however, CT imaging can add clinical value by revealing SBO aetiology and severity. 16 For patients with suspected SBO, plain abdominal radiography has traditionally been the primary imaging technique. It is said to have a 46 percent -90.8 percent 15,[8]

Acute cholecystitis is a clinical diagnosis that necessitates a thorough history and physical examination, laboratory tests, and radiologic examination. Although ultrasound, CT, MRI, and nuclear scintigraphy can all be used to diagnose cholecystitis, the ACR appropriateness criteria list ultrasound as the most appropriate initial imaging in a patient with suspected acute cholecystitis. Several studies have shown that unenhanced helical CT has a high sensitivity and specificity in detecting ureteric calculi. It also allows for alternative diagnoses. As a result, it has surpassed the intravenous programme as the preferred investigation for patients with suspected renal colic. CT is used as the gold standard.[9]

While most ulcers are occult on CT, screening for direct and secondary signs, as well as using multilane reformatted imaging, can improve sensitivity.

Because of its increased sensitivity and better depiction of anatomic structures, pelvic ultrasound is frequently used to confirm pelvic pathology discovered on CT. Early and accurate detection and evaluation of any cause of acute abdomen may aid in treating the patient accurately and before the onset of any complications, as well as preventing any severe complications that may increase morbidity and mortality. Because of the limitations of ultrasound, CT is the second modality of choice in cases of acute

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

abdomen. [3]Because it provides more detail than ultrasound in acute abdomen, and it is also inexpensive and widely available.

The current study aims to assess the causes of abdominal pain on CT, as well as the percentage and frequency of recorded conditions in patients. The current study was significantly contribute to the literature, particularly in Pakistan, where research on this topic is scarce and limited to a single type of condition causing right hypochondriac pain. As a result, the study was aid in the differentiation of causes of abdominal pain and provide information on disease progression.

OBJECTIVE

To evaluate the role of Computed tomography in diagnose of acute abdominal diseases

MATERIAL AND METHODS

Study Design: Non-Descriptive study

Settings: THQ hospital Okara

Duration of Study: 4 months

Sample Size:

According to statistical formula

$$n = Z^2P (1-P)/d^2$$

= sample size was be 169.

Sampling Technique: Convenient sampling technique

Sample Selection:

Inclusion Criteria:

- Patient with acute abdominal pain.
- Patient with abdominal pathology.

Exclusion Criteria:

- Patient without acute abdominal pain.
- No history of acute abdomen.
- Contraindicated to CT scan.
- RTA patients
- Ribs Fracture

Equipment: CT scan Toshiba 64-slice thickness

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

Scanning Technique: The technologist begins by positioning the patients on CT exam table, usually lying flat on back. For plain study, first take scanogram. Lower portion of thoracic to ending of rectum. Slice thickness 3 mm with abdomen window. Scan time: 7.89 sec. Delayed time: 5 sec. For plain contrast study, slice thickness 3 mm with abdomen window. Scan time: 7.89 sec. Delayed time: 60 sec.

RESULTS

In this non-descriptive study we selected convenient sampling technique through which we included total 169 patients in which frequency of male patients were 67 (39.6%) and frequency of female patients were 102 (60.4%). The minimum age of patients was 20 years and maximum age was 84 years and mean age also calculated which was 41.7 years. out of 169 patients the frequency of patients with left lower quadrant pain is 43 (25.5%), frequency of patients with right upper quadrant pain was 81 (47.9%), frequency of patients with left lower quadrant pain was 25 (14.5%) and frequency of patient with left lower quadrant pain was 20 (11.8%). There was frequency of 95 patients who experiences general abdomen patients out of 169 the frequency of cholelithiasis patients is 41 (24.3%) , frequency of acute appendicitis patients is 33 (19.5%) , frequency of small bowel obstruction is 26 (15.4%) , frequency of acute pancreatitis patients is 23 (13.6%) , frequency of kidney stones is 16 (9.5%) , frequency of acute splenomegaly and acute biliary colic is 7 (4.1%) , frequency of diverticulitis and acute bowel volvulus is 6 (3.6%) , frequency of acute hemoperitoneum is 4 (2.4%) are detected on computed tomography.

Table No. 1

Statistics

		Gender	Pain site	Pain type	Pathology Abdomin
N	Valid	169	169	169	169
	Missing	0	0	0	0

Statistics

Age

N	Valid	169
	Missing	0
Mean		47.41
Minimum		20
Maximum		84

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

Table No. 2

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	102	60.4	60.4	60.4
	Male	67	39.6	39.6	100.0
	Total	169	100.0	100.0	

In this descriptive study through Convenient sampling technique, we have selected total 169 patients in which 102 (60.4%) patients was females and 67(39.6%) was male presented with the abdomen pain

Graph No. 1

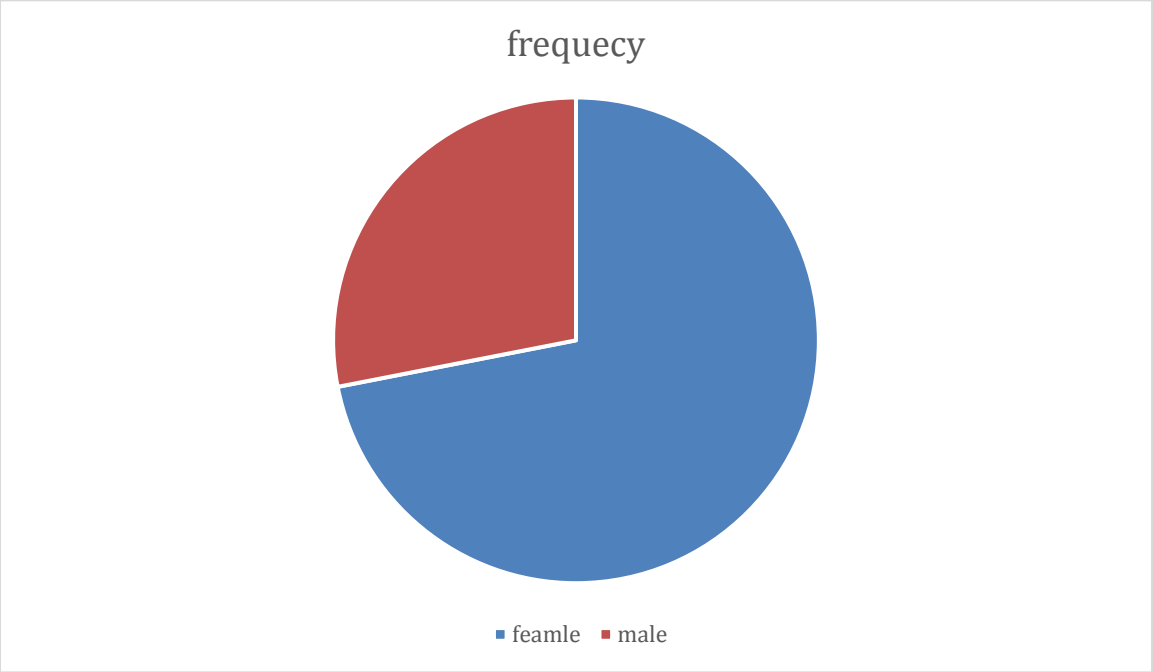


Table No. 3

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	1	.6	.6	.6
	22	1	.6	.6	1.2
	23	3	1.8	1.8	3.0
	24	2	1.2	1.2	4.1
	25	4	2.4	2.4	6.5
	26	1	.6	.6	7.1
	27	2	1.2	1.2	8.3
	29	5	3.0	3.0	11.2
	30	4	2.4	2.4	13.6
	31	5	3.0	3.0	16.6
	32	7	4.1	4.1	20.7
	33	7	4.1	4.1	24.9
	34	5	3.0	3.0	27.8
	35	2	1.2	1.2	29.0
	36	3	1.8	1.8	30.8
	37	3	1.8	1.8	32.5
	38	4	2.4	2.4	34.9
	39	4	2.4	2.4	37.3
	40	2	1.2	1.2	38.5
	41	6	3.6	3.6	42.0
	42	5	3.0	3.0	45.0
	43	6	3.6	3.6	48.5
	44	5	3.0	3.0	51.5
	45	8	4.7	4.7	56.2
	47	1	.6	.6	56.8

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

49	2	1.2	1.2	58.0
50	4	2.4	2.4	60.4
53	1	.6	.6	60.9
54	4	2.4	2.4	63.3
55	8	4.7	4.7	68.0
56	9	5.3	5.3	73.4
57	3	1.8	1.8	75.1
60	4	2.4	2.4	77.5
65	2	1.2	1.2	78.7
66	4	2.4	2.4	81.1
67	11	6.5	6.5	87.6
68	5	3.0	3.0	90.5
71	1	.6	.6	91.1
73	2	1.2	1.2	92.3
74	2	1.2	1.2	93.5
75	3	1.8	1.8	95.3
76	2	1.2	1.2	96.4
77	2	1.2	1.2	97.6
78	1	.6	.6	98.2
80	2	1.2	1.2	99.4
84	1	.6	.6	100.0
Total	169	100.0	100.0	

In this descriptive study through Convenient sampling technique,Thefrequency of total 169 patients. The frequency 102 patients (60.4%) was females and frequency of 67(39.6%) was male,,the minimum age of the patients included in the study was about 20 and maximum age was around 84.

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

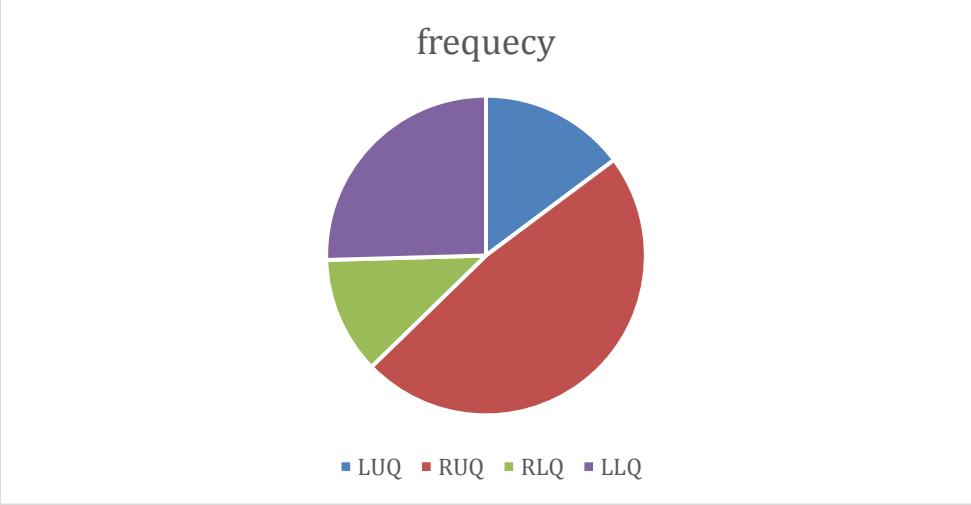
Table No. 4

Pain site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LUQ	25	14.8	14.8	14.8
	RUQ	81	47.9	47.9	62.7
	RLQ	20	11.8	11.8	74.6
	LLQ	43	25.4	25.4	100.0
	Total	169	100.0	100.0	

Frequency of total 169 patients 43 patients (25.4%) pain in left lower quadrant, 81(47.9%) experiences pain in right upper quadrant, patients with left upper quadrant pain was 25 (14.8%) and lower left quadrant patients presenting with pain was 20 (11.8%).

Graph No. 2



Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

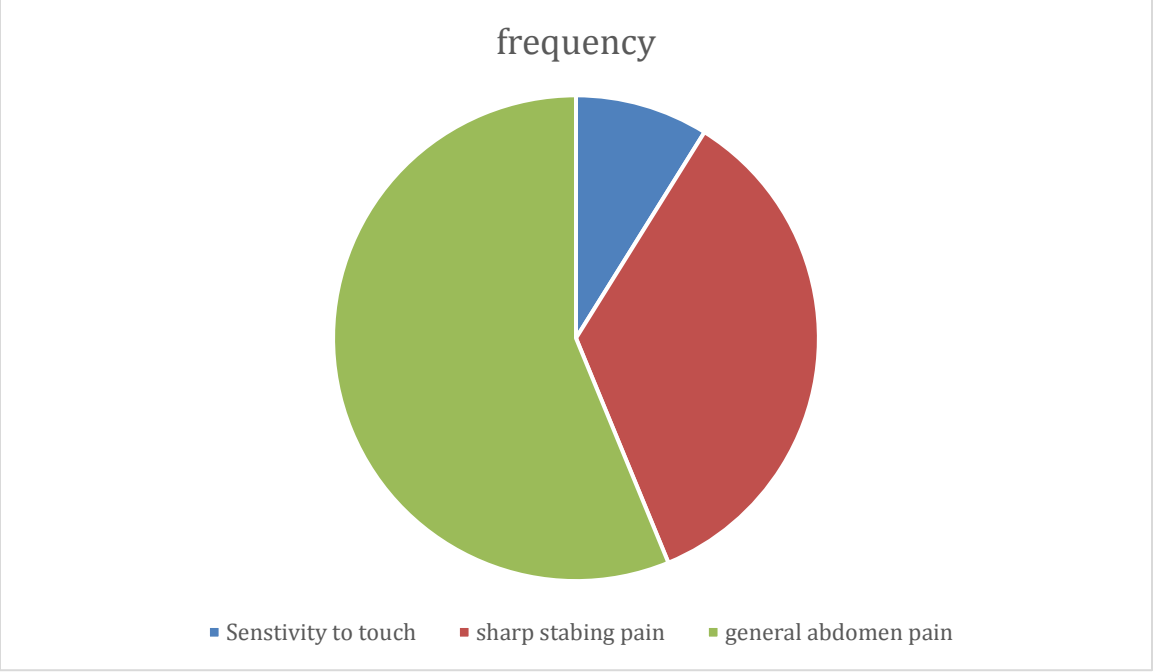
Table No. 5

Pain type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senstivity to touch	15	8.9	8.9	8.9
	sharp stabing pain	59	34.9	34.9	43.8
	general abdomen pain	95	56.2	56.2	100.0
	Total	169	100.0	100.0	

There was frequency of 95(56.2%) patients who experiences general abdomen patients out of 169 patients and patients with sharp stabbing pain was 59 (34.9%) and 15 (8.9%) patients presented with sensitive to touch from totel of 169 patients.

Graph No. 3



Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

Table No. 6

Pathology Abdomen

	Frequency	Percent	Valid Percent	Cumulative Percent
Kidney Stone	16	9.5	9.5	9.5
Acute Cholecystitis	41	24.3	24.3	33.7
Acute Pancreatitis	23	13.6	13.6	47.3
Acute Appendicitis	33	19.5	19.5	66.9
Acute Diverticulitis	6	3.6	3.6	70.4
Small Bowel Obstruction	26	15.4	15.4	85.8
Acute Splenomegaly	7	4.1	4.1	89.9
Acute Bowel Volvulus	6	3.6	3.6	93.5
Acute Hemoperitonium	4	2.4	2.4	95.9
Acute Biliary Colic	7	4.1	4.1	100.0
Total	169	100.0	100.0	

Frequency of cholelithiasis was the highest, present in 41(24.3%) patients followed by acute appendicitis 33 (19.5%), small bowel obstruction 26(15.4%) and acute pancreatitis 23 (13.6 %). Other recorded causes included kidney stone in 16 patients about (9.5%), acute splenomegaly and acute biliary colic both was present in 4.1% patients. Other non-significant causes included acute diverticulitis and patients with acute hemoperitionium was 2.4%.

Graph No. 4

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

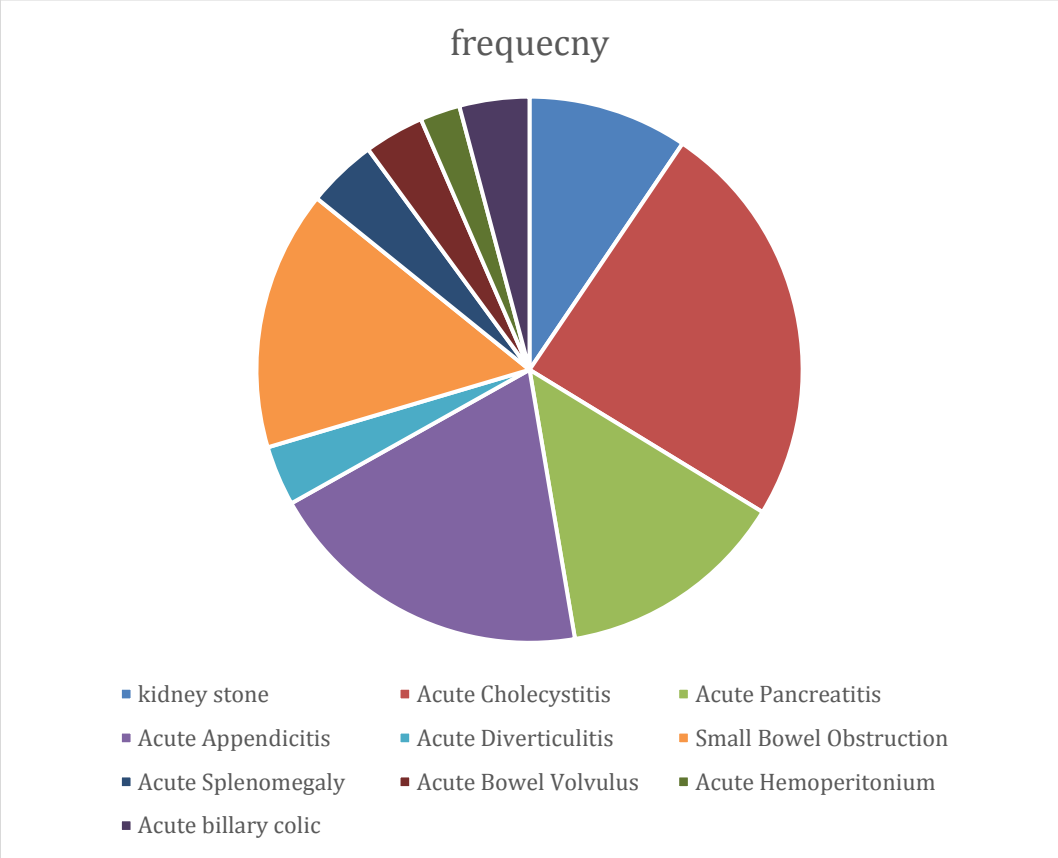
https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071



DISCUSSION

In our study, the patients frequency consisted of 102 females and 67 male participants. According to the data analysis of 169 patients , all were presenting with mild, moderate or severe right abdomen pain and underwent Computed tomography evaluation, which was the imaging modality of choice. Types of pain, which are sensitivity to touch, sharp stabbing pain or general abdomen pain, were correlated with gender, where results indicated that both males and females mostly presented with general abdominal pain and stabbing or sharp pain was present in more females than males. Other studies have recorded pain types by their locations as generalized right hypochondriac pain, non-specific generalized pain, unilateral loin pain and bilateral loin pain.[13] Due to the primary concern on the right hypochondriac region, the present study categorizes pain types as distinctive from other studies undertaken.

Coming to the causes of Abdomen pain recorded on Comupted tomography, our study attributed for a number of causes found where cholelithiasis was the highest present in 24.3% patients followed by

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

acute appendicitis (19.5%), small bowl obstruction 15.4% and acute pancreatitis 13.6 %. Other recorded causes included kidney stone in 16 patients about 9.5%, acute splenomegaly and acute biliary colic both was present in 4.1% patients. Other non-significant causes included acute diverticulitis and acute bowl obstruction 3.6% both, and patients with acute hemoperitionium was 2.4%. Unlike other studies found in literature, the present study recorded the highest existence of Cholelithesis to be the cause of abdomen pain. Coinciding with the present study results, Elnair research in 2016, conducted a similar analysis and it was found that the abdomen pain caused mainly in the right upper quadrant was mostly due gall bladder disease, where 52.9% was the frequency of gall bladder stones, and 29.4% with acute cholecystitis. Similarly, in another study consequently cholelithiasis was present in 42% of the study population and was the leading cause of abdomen pain[31]. Conversely, Abtehag and Azza have found nonalcoholic fatty liver disease and cholelithiasis amongst the leading causes of RUQ pain.[13]

Ashaolu BA, et al. in 2015 conducted a prospective study. In which he included consecutive 150 adult patients aged 15 years and above presenting with non-traumatic acute abdomen via the adult. The common spectrum of diseases encountered on US in this study included appendicitis (66 [44%]), ectopic pregnancy (34 [22%]), intestinal obstruction (13%)and in our study patients of acute appendicitis was (19.5%), small bowl obstruction 15.4% and acute pancreatitis13.6 %.it was seen that the percentage of small bowl obstruction was closely related to our study which was 13% in Asaolu BA study and 15 %in our study.[12]In our study we conclude that the frequency of male patients that we included in our study are 102 (60.4%) and frequency of female patients are 67 (39.6%) out of total 169 patients. Each patient comes with different complaints and diagnosed with the different abdominal pathologies on computed tomography. out of 169 patients the frequency of cholelithiasis patients is41 (24.3%) , frequency of acute appendicitis patients is 33 (19.5%) , frequency of small bowel obstruction is 26 (15.4%) , frequency of acute pancreatitis patients is 23 (13.6%) , frequency of kidney stones is 16 (9.5%) , frequency of acute splenomegaly and acute biliary colic is 7 (4.1%) , frequency of diverticulitis and acute bowel volvulus is 6 (3.6%) , frequency of acute hemoperitoneum is 4 (2.4%) are detected on computed tomography.

W C Ang, et al. 2017 conduct a study on Adaptive iterative dose reduction (AIDR) 3D in low dose CT abdomen-pelvis in which they concluded that the number of patients in LD AIDR (group 1) and STD FBP (group 2) were equal (20 patients in each group). The mean age, weight and height (± standard deviation) for group 1 patients was 41 ± 17 years, 59.03 ± 12.75 kg and 1.67 ± 0.03 m; 52 ± 21 years, 61.83 ± 13.53 kg and 1.68 ± 0.04 m for group 2 patients. Group 1 and group 2 patients had mean BMI (±

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

standard deviation) of 20.99 ± 4.0 and 22.17 ± 4.61 respectively, ranging from minimum of 16.63 to the maximum 30.29. And he concluded that there was 38% dose reduction in LD CT protocols compared to STD CT. Moreover, by using AIDR 3D reconstruction in LD CT, considerable improvement in objective and subjective image quality which was superior to STD FBP reconstruction in spite of lower radiation dose. AIDR 3D reconstruction is a promising CT dose optimization tool that benefit clinical CT imaging by producing excellent image quality at low dose exposure to the patients. [27].In our study we conclude that the frequency of male patients that we included in our study are 102 (60.4%) and frequency of female patients are 67 (39.6%) out of total 169 patients. Each patient comes with different complaints and diagnosed with the different abdominal pathologies on computed tomography. out of 169 patients the frequency of cholelithiasis patients is 41 (24.3%) , frequency of acute appendicitis patients is 33 (19.5%) , frequency of small bowel obstruction is 26 (15.4%) , frequency of acute pancreatitis patients is 23 (13.6%) , frequency of kidney stones is 16 (9.5%) , frequency of acute splenomegaly and acute biliary colic is 7 (4.1%) , frequency of diverticulitis and acute bowel volvulus is 6 (3.6%) , frequency of acute hemoperitoneum is 4 (2.4%) are detected on computed tomography.

Chong and Shah et al. in 2008 conducted a review of literature in a study article where ultrasound for RUQ pain was evaluated. It was found that ultrasound of the right upper quadrant is one of the most commonly performed sonographic studies. Sonography is the first-line imaging modality for evaluation of the patient who has right upper quadrant abdominal pain. It is accurate, quick, and easy to perform, does not use ionizing radiation, and can be done in at the patient's bedside. This article describes the sonographic evaluation of right upper quadrant pain.[29]. In our study we conclude that the frequency of male patients that we included in our study are 102 (60.4%) and frequency of female patients are 67 (39.6%) out of total 169 patients. Each patient comes with different complaints and diagnosed with the different abdominal pathologies on computed tomography. out of 169 patients the frequency of cholelithiasis patients is 41 (24.3%) , frequency of acute appendicitis patients is 33 (19.5%) , frequency of small bowel obstruction is 26 (15.4%) , frequency of acute pancreatitis patients is 23 (13.6%) , frequency of kidney stones is 16 (9.5%) , frequency of acute splenomegaly and acute biliary colic is 7 (4.1%) , frequency of diverticulitis and acute bowel volvulus is 6 (3.6%) , frequency of acute hemoperitoneum is 4 (2.4%) are detected on computed tomography.

Vol. 5 No. 2 (2026)

Pakistan Journal of Medical & Cardiological Review

https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387

Print ISSN 3007-2379

Saleem et al - 2026

DOI: http://doi.org/10.5281/zenodo.19569071

Spence SC, Teichgraeber and Chandrasekhar et al. conducted a research in 2009, the purpose was to review the sonographic spectrum of disease entities evaluated by right upper quadrant (RUQ) sonography on an emergent basis. Right upper quadrant sonography was performed on an emergent basis in patients who came to the emergency department with signs and symptoms suspicious for or simulating acute cholecystitis or diseases of the liver and biliary tree. In results, a wide gamut of acute and chronic cholecystitis and diseases of the liver and biliary tree were visualized on RUQ sonography. Several other entities in addition to hepatic and biliary disease were also suspected on sonography and further evaluated by computed tomography. It was concluded that right upper quadrant sonography is the first line of imaging in patients with signs and symptoms of hepatic, gallbladder, or biliary disease as well as RUQ pain. Patient triage or additional imaging may be obtained on the basis of emergent RUQ sonographic findings[30]. In our study we conclude that the frequency of male patients that we included in our study are 102 (60.4%) and frequency of female patients are 67 (39.6%) out of total 169 patients. Each patient comes with different complaints and diagnosed with the different abdominal pathologies on computed tomography. out of 169 patients the frequency of cholelithiasis patients is 41 (24.3%) , frequency of acute appendicitis patients is 33 (19.5%) , frequency of small bowel obstruction is 26 (15.4%) , frequency of acute pancreatitis patients is 23 (13.6%) , frequency of kidney stones is 16 (9.5%) , frequency of acute splenomegaly and acute biliary colic is 7 (4.1%) , frequency of diverticulitis and acute bowel volvulus is 6 (3.6%) , frequency of acute hemoperitoneum is 4 (2.4%) are detected on computed tomography.

CONCLUSION

In the conclusion of our study, CT seems to be an important diagnostic modelity in both the diagnosis and follow-up of abdomen pain and it may provide a faster and easier method of diagnosis. Major causes of acute abdominal pain are found to be as cholelithiasis, appendicitis, small bowl obstuction and pancreatits. Nephrolithiasis, splenomegaly and divirticlitis are also noted as causes of pain. In some patients acute hemopertitionium was also the cause of abdomen pain.

RECOMMENDATIONS

1) More advanced CT equipment with high Slice process should be used to reduce the false positive and false negative results.

2) Long study duration is recommended for more accurate results.

Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387
Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

LIMITATION(S)

1. Computed Tomography is a modified tool used for the early diagnosis of causes that result in abdomen pain. However, CT is not always a perfect diagnostic modality for the assessment of issues related with gallbladder such as stones and biliary sludge. Significant limitations related to CT are the non-assessment to altered anatomy of patients, obesity and corpulence and compromised operator skills.
2. In patients with typical abdominal and right quadrant pain, CT points out the evidences of stones, sludge and other conditions in more than half patients. However, worsened conditions and ailments in patients need additional imaging to evaluate for unfound and rare causes of the pain. These limitations mentioned are thus the limitations of the study as CT is being studied in this research.
3. Moreover, the study sample is confined to two hospitals of Lahore from where data is collected. Thus, study results are not appropriately applicable to whole world population in case of incidence of causes of abdomenial pain.

REFERENCES

1. Siewert B, Raptopoulos V. CT of the acute abdomen: findings and impact on diagnosis and treatment. AJR American journal of roentgenology. 1994; 163:1317-24.
2. Lakhoo K, Almario CV, Khalil C, Spiegel BM. Prevalence and characteristics of abdominal pain in the United States. Clinical Gastroenterology and Hepatology. 2021; 19:1864-72. e5.
3. Marincek B. Nontraumatic abdominal emergencies: acute abdominal pain: diagnostic strategies. European Radiology. 2002; 12:2136-50.
4. Stoker J, van Randen A, Laméris W, Boermeester MA. Imaging patients with acute abdominal pain. Radiology. 2009; 253:31.
5. Chin JY, Goldstraw E, Lunniss P, Patel K. Evaluation of the utility of abdominal CT scans in the diagnosis, management, outcome and information given at discharge of patients with non-traumatic acute abdominal pain. The British journal of radiology. 2012; 85:e596-e602.
6. Birnbaum BA, Jeffrey Jr RB. CT and sonographic evaluation of acute right lower quadrant abdominal pain. AJR American journal of roentgenology. 1998; 170:361-71.
7. Kim SW, Kim JH, Kwak S, Seo M, Ryoo C, Shin C-I, et al. The feasibility of deep learning-based synthetic contrast-enhanced CT from nonenhanced CT in emergency department patients with acute abdominal pain. Scientific reports. 2021; 11:1-10.

Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387
Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

8. Gans SL, Stoker J, Boermeester MA. Plain abdominal radiography in acute abdominal pain; past, present, and future. International Journal of General Medicine. 2012; 5:525.
9. Miller SK, Alpert PT. Assessment and differential diagnosis of abdominal pain. The Nurse Practitioner. 2006; 31:38-47.
10. Nachiappan S, Mortimer R, Howlett D. Computed tomography in the assessment of the acute abdomen. The Bulletin of the Royal College of Surgeons of England. 2018; 100:296-300.
11. Nguyen LK, Wong DD, Fatovich DM, Yeung JM, Persaud J, Wood CJ, et al. Low-dose computed tomography versus plain abdominal radiography in the investigation of an acute abdomen. ANZ journal of surgery. 2012; 82:36-41.
12. Ashaolu B, Asaleye M, Adetiloye A, Alatise I. Spectrum of diseases and diagnostic values of ultrasound in adult patients with nontraumatic acute abdomen in a Nigerian tertiary health facility. Nigerian Journal of Surgery. 2015; 21:6-12.
13. Abtehag A, Azza S. Ultrasound Findings among Patients Who Have Chronic Abdominal Pain and Correlation between Site of Pain and Ultrasound Findings. OMICS J Radiol. 2019; 8:2.
14. Murphy M, Gibney B, Gillespie C, Hynes J, Bolster F. Gallstones top to toe: what the radiologist needs to know. Insights into imaging. 2020; 11:1-14.
15. Chawla A, Bosco JI, Lim TC, Srinivasan S, Teh HS, Shenoy JN. Imaging of acute cholecystitis and cholecystitis-associated complications in the emergency setting. Singapore medical journal. 2015; 56:438.
16. Marasco G, Verardi FM, Eusebi LH, Guarino S, Romiti A, Vestito A, et al. Diagnostic imaging for acute abdominal pain in an Emergency Department in Italy. Internal and Emergency Medicine. 2019; 14:1147-53.
17. . !!! INVALID CITATION !!! 22.
18. Redfern V, Mortimore G. Right hypochondrial pain leading to diagnosis of cholestatic jaundice and cholecystitis: a review and case study. Gastrointestinal Nursing. 2019; 17:32-41.
19. Vimalachandran P, Paknikar J. Recurrent right upper quadrant abdominal pain. Journal of Family Practice. 2016; 65:723-5.
20. Cheyne G, Runau F, Lloyd DM. Right upper quadrant pain and raised alkaline phosphatase is not always a hepatobiliary problem. Ann R Coll Surg Engl. 2014; 96:118e-20e.

DOI: http://doi.org/10.5281/zenodo.19569071

21. Murphy MC, Gibney B, Gillespie C, Hynes J, Bolster F. Gallstones top to toe: what the radiologist needs to know. Insights into Imaging. 2020; 11:13.

22. Woo MY, Taylor M, Loubani O, Bowra J, Atkinson P. My patient has got abdominal pain: identifying biliary problems. Ultrasound. 2014; 22:223-8.

23. . !!! INVALID CITATION !!! 32.

24. AL Basher SHM. Study of Patients with Right Upper Quadrant Pain using Ultrasonograhpy: Sudan University of Science and Technology; 2017.

25. Hiatt KD, Ou JJ, Childs DD. Role of Ultrasound and CT in the Workup of Right Upper Quadrant Pain in Adults in the Emergency Department: A Retrospective Review of More Than 2800 Cases. American Journal of Roentgenology. 2020; 214:1305-10.

26. Rafiq S, Ellahi I, Shabir S, Shahnawaz S. Multidetector computerized tomography in acute abdomen. International Surgery Journal. 2019; 6:2353-7.

27. Ang W, Hashim S, Karim M, Bahruddin N, Salehhon N, Musa Y. Adaptive iterative dose reduction (AIDR) 3D in low dose CT abdomen-pelvis: Effects on image quality and radiation exposure. Journal of Physics: Conference Series; 2017: IOP Publishing.

28. Elnair ZAMA. Assessment of Right Upper Quadrant Pain using Ultrasonography: Sudan University of Science and Technology; 2016.

29. Chong WK, Shah MS. Sonography of right upper quadrant pain. Ultrasound Clinics. 2008; 3:121-38.

30. Spence SC, Teichgraeber D, Chandrasekhar C. Emergent right upper quadrant sonography. J Ultrasound Med. 2009; 28:479-96.

31. Working GI, APA APG. IAP/APA evidence-based guidelines for the management of acute pancreatitis. Pancreatology: official journal of the International Association of Pancreatology (IAP)[et al]. 2013; 13:e1.

32. Shrikhande S, Barreto S, Singh S, Udwadia T, Agarwal A. Cholelithiasis in gallbladder cancer: coincidence, cofactor, or cause! European Journal of Surgical Oncology (EJSO). 2010; 36:514-9.

33. Moe OW. Kidney stones: pathophysiology and medical management. The lancet. 2006; 367:333-44.

Pakistan Journal of Medical & Cardiological Review
https://pakjmcr.com/index.php/1/about

Online ISSN 3007-2387
Print ISSN 3007-2379

DOI: http://doi.org/10.5281/zenodo.19569071

34. Simon DR, Palese MA. Clinical update on the management of adrenal hemorrhage. Current urology reports. 2009; 10:78-83.

35. Young Jr WF. The incidentally discovered adrenal mass. New England Journal of Medicine. 2007; 356:601-10.

36. Chevalier RL, Forbes MS, Thornhill BA. Ureteral obstruction as a model of renal interstitial fibrosis and obstructive nephropathy. Kidney international. 2009; 75:1145-52.

37. Sugano K, Tack J, Kuipers EJ, Graham DY, El-Omar EM, Miura S, et al. Kyoto global consensus report on Helicobacter pylori gastritis. Gut. 2015; 64:1353-67.

38. Arena U, Vizzutti F, Corti G, Ambu S, Stasi C, Bresci S, et al. Acute viral hepatitis increases liver stiffness values measured by transient elastography. Hepatology. 2008; 47:380-4.

39. Tsai F-C, Huang Y-T, Chang L-Y, Wang J-T. Pyogenic liver abscess as endemic disease, Taiwan. Emerging infectious diseases. 2008; 14:1592.

40. Rungsinaporn K, Phaisakamas T. Frequency of abnormalities detected by upper abdominal ultrasound. Medical journal of the Medical Association of Thailand. 2008; 91:1072.