Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublisher.com/sjams/

OPEN ACCESS

Radiological Sciences

The Role of Computed Tomography in Diagnosis Abdominal Pathology among Saudi Population at Tabuk City-KSA

Alaa Ibrahim Ahmed*, Nisreen Hassan, Ibtihal Dhaifalla F Alanazi, Fatimah Mousa Alshehri, Shihanah Khalid Alqabli, Rahaf Mohammed Alshammari, Ghaida Bakheet Albalawi, Khulud Muidh Aldawsari

Radiological Sciences Department Alghad International Colleges-Tabuk, Saudi Arabia

DOI: 10.36347/sjams.2020.v08i02.003 | **Received:** 17.01.2020 | **Accepted:** 24.01.2020 | **Published:** 08.02.2020

***Corresponding author:** Alaa Ibrahim Ahmed

Abstract **Original Research Article**

Abdominal computed tomography CT scanning is used in the evaluation of trauma victims for visceral injury and in the evaluation of acute abdominal pain, with a major role in the evaluation of renal calculi, acute appendicitis, and complex abdominal pathology [1]. And the role of intravenous contrast-enhanced CT is well established, with evidence demonstrating improved speed and accuracy of diagnosis [2]. This study was conducted in Saudi Arabia in Tabuk city, in the computed tomography departments of King Fahd specialist hospital, King Khalid hospital. This study aims to evaluation of abdominal pathology by computed tomography. The objectives of this study are to evaluate patient with abdomen diseases using CT among Saudi population. This is retrospective cross sectional study carried out during the period from February to May 2018. The results showed that 31 cases was (67.4%) were female and 15cases (32.6%) were male out of 46%patients scanned. The incidence of abdominal pathology was high among the age group20-39which represented 19cases(41.3%)followed by 14cases(30.4%)were between age of 60-89 years old,11cases(23.9%)were age group of 40-59,2cases(4.3%)were patients with age 0-9. ***Conclusion:*** CT imaging in the diagnosis, management and outcome of patients presenting with abdominal pathology is well established, the study concluded that computed tomography provides excellent details about the type of abdomen pathology.

Keywords: Computed Tomography, Abdominal pathology, Trauma.

INTRODUCTION

Abdominal CT scanning is used in the emergency setting to diagnose complex intra-abdominal conditions, to differentiate causes from each other. Organs that are found in the abdominal cavity include liver, spleen, stomach, small intestine, colon, gall bladder and the pancreas. These are the diseases that affected the abdominal organs. This is despite the fact that diseases may come from other sources, including the abdominal wall tissue that surrounds the abdominal wall such as the muscles. Many abdominal diseases include inflammation, blockage and swelling of the organ. These diseases are caused by many causes, for example. The obstruction may result from a tumor. The symptoms and signs of abdominal diseases vary from case to case based on many things including the cause of pain and the injured member. The major system assessed in the abdominal examination is the GI or digestive system. The digestive system is responsible for the ingestion and digestion of food, absorption of nutrients, and elimination of waste products [2].

Computed tomography, more commonly known as a CT or CAT scan, is a diagnostic medical test that, like traditional x-rays, produces multiple images or pictures of the inside of the body.The cross-sectional images generated during a CT scan can be reformatted in multiple planes, and can even generate three-dimensional images. These images can be viewed on a computer monitor, printed on film or transferred to a CD or DVD. CT images of internal organs, bones, soft tissue and blood vessels and also we can use contrast media to provide more information about vessels and GIT CT scan give us greater detail than traditional x-rays, particularly of soft tissues and blood vessels [3].

There has reasonably been an increasing reliance on CT imaging to guide management; the role of intravenous (i.v.) contrast-enhanced CT is well established, with evidence demonstrating improved speed and accuracy of diagnosis, with resultant reduction in hospital admission rates and length of stay, as well as reduced morbidity and mortality [4–10]. In a minority of cases, the utility of CT is more limited,

especially in the diagnosis of early inflammatory changes such as in inflammatory bowel disease, mesenteric ischaemia and mild acute pancreatitis, and in patients who have a history of chronic abdominal disease, with disagreement between the radiological and clinical diagnoses more likely [11, 12]. The problem of the study is increasing number of people complaining of abdomen pathology, the abdominal pathology is serious illness an some of it can cause life threating and the general objective is to evaluate the role of CT in diagnosis abdomen pathology with secondary objectives are determine the most common abdomen pathology, to correlate the CT finding with gender and to find out the relation between the final diagnose and patient's age 13.

METHODS AND MATERIALS

Patients

This study was registered with the hospital radiology department and permission was given to review the patient data. Ethics approval was not required as it was considered part of the departmental audit. This retrospective study was carried out during the period from February to May 2018 and conducted at Saudi Arabia in Tabuk city, in the computed tomography departments of King Fahd specialist hospital, King Khalid hospital. all patients with symptoms of abdominal pain (with positive signs on clinical examination most commonly and who were referred for CT scan as part of their evaluation were included in the study.

RESULTS

Table-1: Gender distribution among the sample of the study

Cases		Frequency	Percent	Valid Percent	Cumulative Percent
	Female	31	67.4	67.4	67.4
	Male	15	32.6	32.6	100.0
	Total	46	100.0	100.0	

Table-2: Age distribution among the sample of the study

	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-9 years	2	4.3	4.3	4.3
	20-39 years	19	41.3	41.3	45.7
	40-59 years	11	23.9	23.9	69.6
	60-89 years	14	30.4	30.4	100.0
	Total	46	100.0	100.0	

Table-3: CT findings distribution among the sample of the study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	2	4.3	4.3	4.3
	fatty liver	7	15.2	15.2	19.6
	hernia	7	15.2	15.2	34.8
	renal calculus	6	13.0	13.0	47.8
	cholelithiasis	3	6.5	6.5	54.3
	liver cysts	2	4.3	4.3	58.7
	enlarge liver	4	8.7	8.7	67.4
	liver lesion	2	4.3	4.3	71.7
	renal mass	2	4.3	4.3	76.1
	renal cysts	3	6.5	6.5	82.6
	colon diverticulum	2	4.3	4.3	87.0
	other	6	13.0	13.0	100.0
	Total	46	100.0	100.0	

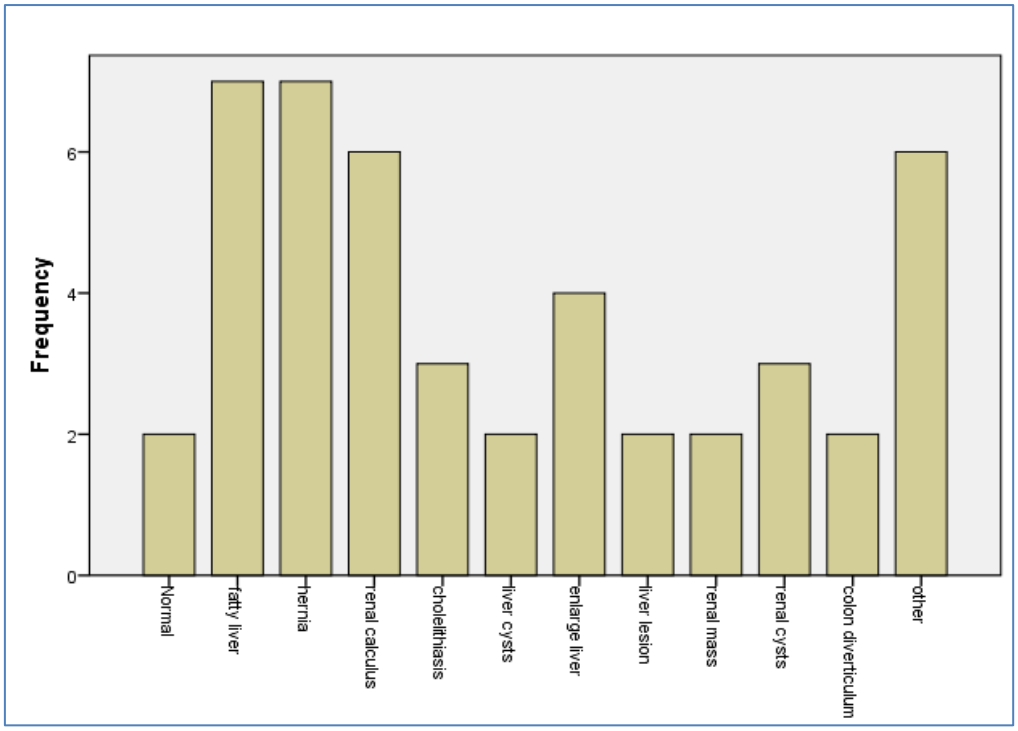

Fig-1: CT finding distributions among sample of the study

Table-4: distribution of CT findings in final diagnosis among the sample of the study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	liver pathology	17	37.0	37.0	37.0
	renal pathology	11	23.9	23.9	60.9
	GB pathology	3	6.5	6.5	67.4
	hernia	7	15.2	15.2	82.6
	colon pathology	3	6.5	6.5	89.1
	other	3	6.5	6.5	95.7
	normal	2	4.3	4.3	100.0
	Total	46	100.0	100.0	

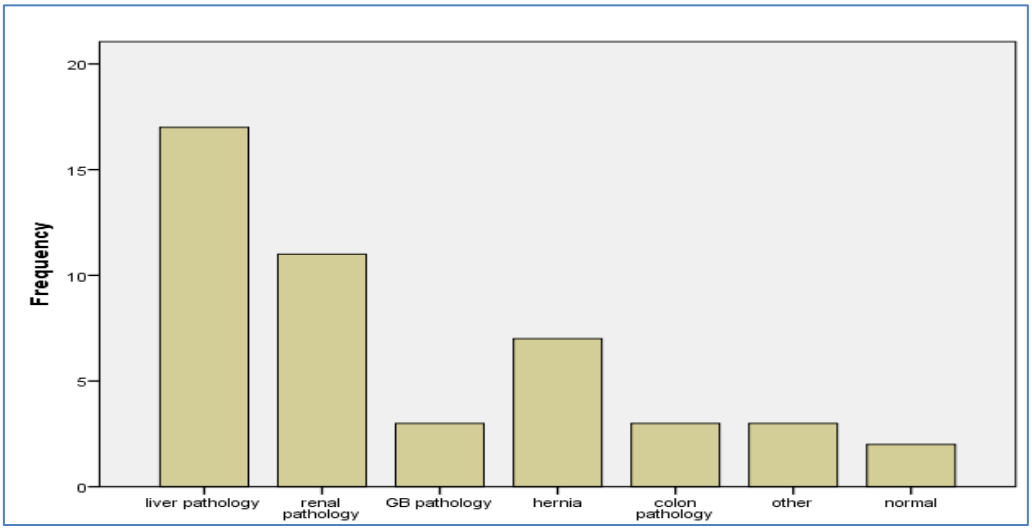

Fig-2: CT final diagnosis

Table-5: CT findings * age group distribution cross tabulation

		age group distribution				Total
		0-9 years	20-39 years	40-59 years	60-89 years	
CT findings	Normal	0	1	0	1	2
	fatty liver	1	2	1	3	7
	hernia	0	2	4	1	7
	renal calculus	0	3	1	2	6
	cholelithiasis	0	2	0	1	3
	liver cysts	0	1	1	0	2
	enlarge liver	0	2	0	2	4
	liver lesion	0	1	0	1	2
	renal mass	0	0	1	1	2
	renal cysts	0	1	1	1	3
	colon diverticulum	0	1	1	0	2
	other	1	3	1	1	6
Total		2	19	11	14	46

Table-6: Final Diagnosis * Gender distribution Cross tabulation

		Gender distribution		Total
		Female	Male	
Final Diagnosis	liver pathology	11	6	17
	renal pathology	8	3	11
	GB pathology	1	2	3
	hernia	6	1	7
	colon pathology	3	0	3
	other	1	2	3
	normal	1	1	2
Total		31	15	46

DISCUSSION

The study is conducted on 46 patients with different abdominal disease investigated using computed tomography, 31 cases was(67.4%) were female and 15 cases (32.6%) were male, This result agreed with study done by J Y Chin, whose found from 114 patients; 79 were women [14].

The incidence was high among the age group 20-39 which represented 19 cases (41.3%), followed by 14 cases (30.4 %) were between the age of 60-89, 11 cases (23.9%) were age group40-59, 2 cases (4.3%) were patient with age 0-9. The study found that the common age group affected by abdominal disease was 20-39 years.

Regarding computed tomography findings and diagnosis, the study showed that most common cause 7cases (15.2%) hernia and 7cases (15.2%) fatty liver, followed by renal calculus (13.0%), enlarged liver 4 cases (8.7%) for each one. The study found that the most common cause of abdominal pain it was fatty liver and hernia (15.2%). This result disagreed with study done by Hyo-Cheol kim *et al*. Whose found that metastases were present in (50%) of patients [15].

CONCLUSION

CT imaging in the diagnosis, management and outcome of patients presenting with abdominal pathology is well established. In a minority of cases, the usefulness is limited by certain factors; specifically, the use of contrast imaging, the ability of CT to define various pathologies of imaging findings.

The study concluded that computed tomography provides excellent details about the type of abdomen pathology causes. Hernia and fatty liver (15.2%) is predominant over other abdomen diseases. The female more affected by abdomen conditions than males. The incidence is high among the age group (20-39) years.

REFERENCES

1. [Guideline] Sudakoff GS, Yucel EK, Rosen MP, Francis IR, Baum RA, Foley WD. ACR Appropriateness Criteria® blunt abdominal trauma. acr. org. at http://www.acr.org/Search?q=abdominal%20ct%20trauma.
2. Rosen MP, Sands DZ, Longmaid HE, Reynolds KF, Wagner M, Raptopoulos V. Impact of abdominal CT on the management of patients

presenting to the emergency department with acute abdominal pain. AJR Am J
3. https://emedicine.medscape.com/article/2114236-overview. Author: Caroline R Taylor Medscape
4. Ng CS, Watson CJ, Palmer CR, See TC, Beharry NA, Housden BA. Evaluation of early abdominopelvic computed tomography in patients with acute abdominal pain of unknown cause: prospective randomised study. BMJ 2002; 325:1387.
5. Rosen MP, Sands DZ, Longmaid HE 3rd, Reynolds KF, Wagner M, Raptopoulos V. Impact of abdominal CT on the management of patients presenting to the emergency department with acute abdominal pain. AJR Am J Roentgenol. 2000; 174:1391–6.
6. Rosen MP, Siewert B, Sands DZ, Bromberg R, Edlow J, Raptopoulos V. Value of abdominal CT in the emergency department for patients with abdominal pain. Eur Radiol. 2003; 13:418–24.
7. Salem TA, Molloy RG, O'Dwyer PJ. Prospective study on the role of CT scan in patients with an acute abdomen. Colorectal Disease. 2005; 7:460–6.
8. Taourel P, Baron MP, Pradel J, Fabre JM, Seneterre E, Bruel JM. Acute abdomen of unknown origin: impact of CT in diagnosis and management. Gastrointest Radiol. 1992; 17:287–91.
9. Stoker J, Van Randen A, Lameris W, Boermeester MA. Imaging patients with acute abdominal pain. Radiology. 2009; 253:31–46.
10. Siewert B, Raptopoulos V, Mueller MF, Rosen MP, Steer M. Impact of CT on diagnosis and management of acute abdomen in patients initially treated without surgery. *AJR Am J Roentgenol*. 1997; 168:173–8.
11. Foinant M, Lipiecka E, Buc E, Boire JY, Schmidt J, Garcier JM. Impact of computed tomography on patient's care in nontraumatic acute abdomen: 90 patients. *J Radiol*. 2007; 88:559–65.
12. Johnson CD, Baker ME, Rice RP, Silverman P, Thompson WM. Diagnosis of acute colonic diverticulitis: comparison of barium enema and CT. AJR 1987;148:541–6.
13. Hill MV, Barkin J, Isikoff MB, Silverstein W, Kalser M. Acute pancreatitis: clinical vs CT findings. AJR Am J Roentgenol. 1982; 139:263–9.
14. JY Chin, E Goldstraw, P Lunniss and K Patel. 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. British Journal of Radiology. 2012, 85: e596–e602
15. Hyo-Cheol Kim MD, Jeong Min Lee and Byung Ihn Choi, Cystic Changes in Intraabdominal Extrahepatic Metastases from Gastrointestinal Stromal Tumors Treated with Imatinib. Korean journal radiology. 2004jul-sep:5(3):157-163.