



Sonographic findings in patients with upper abdominal pain in Nnewi community, Anambra state, Nigeria.

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Abstract

Abdominal ultrasound is a rapid and non-invasive method of examination of the abdomen. Abdominal ultrasound is an imaging procedure used to examine the internal organs of the abdomen including the liver, gallbladder, spleen pancreas and kidney. The blood vessels that connect to some of these organs can also be looked at using ultrasound .To evaluate the common ultrasound findings in patients with upper abdominal pain and to correlate the ultrasound findings in patients with upper abdominal pain with age and gender. The data was collected from existing reports in the retrieved files. The following data were collected from the patient's reports; the patient's sex, the patient's age and the ultrasound report/diagnoses. A total of 392 patients that were scanned for upper abdominal pain from January, 2013 to January, 2014 were studied. The sonographic reports showed that fatty liver was the highest sonographic findings in patients with upper abdominal pain with a total number of 129 (33.0%), followed by splenomegaly 45(11.4%), hydronephrosis 32(8.2%), nephrolithiasis 26(6.5%), cholelithiasis 24(6.1%). It was also found that 56-60 years age group was mostly affected with upper abdominal pain and 0-5 years of age group was the least affected. Based on this study, the incidence of upper abdominal pain was greater in female than in male. Also the liver organ showed to be most affected with the pancreas being the least affected.

Keywords: Sonographic findings, Upper abdominal pain, Nnewi Community.

Introduction

Abdominal ultrasound is a rapid and non-invasive method of examination of the abdomen. Abdominal ultrasound is an imaging procedure used to examine the internal organs of the abdomen including the liver, gallbladder, spleen

pancreas and kidney.The blood vessels that connect to some of these organs can also be looked at using ultrasound (Grainger and Allison, 2008).

Abdominal pain is the most frequent reasons for abdominal scan. Ultrasound is one of the non-invasive modalities used for the investigation of patients with abdominal pain. Upper abdominal pain is one of the commonest complaints in patients seeking medical advices (Aleman and Tarnus, 1999).

Upper abdominal ultrasound can reveal many possible conditions including abdominal aortic aneurysm, abscess, cholecystitis, gall stone, hydronephrosis, kidney stones; splenomegaly and pancreatitis (Pick hard, 2008).

In preparation for ultrasound of the liver, gallbladder or digestive tract, the patient will be asked to fast overnight or for at least six hours prior to the test, which reduces bowel gas that can obscure the image and keeps the gallbladder filled with bile, making it easier to visualize its contents. In examinations involving stomach and duodenum, the patient will be given water to drink immediately prior to the test because these organs are better visualized when filled with fluids. Abdominal pain may not come from the abdomen; some surprising causes include heart attacks and pneumonias.

The location of the pain within the abdomen can be an important clue to diagnosis during scanning (Stephen and Han, 2010). Symptoms that occur with upper abdominal pain include back pain, chest pain, constipation, diarrhea, fever, nausea and vomiting.

Upper abdominal pain can be acute or chronic. Upper abdominal pain whether acute or chronic is caused by diseases of the liver, gallbladder kidneys pancreas, stomach, duodenum, spleen, pleura pericardium and basal lung segments (Jeffery and Ralls, 1995). The characteristics of the pain, location and timing duration etc are important in diagnosing its causes. All these conditions have useful ultrasound features which help in their diagnosis except uncomplicated peptic ulcer disease, acute myocardial infarction and pneumonitis.

The frequency with which even relatively inexpensive and non-invasive diagnostic tests are

performed clearly places a burden on healthcare. Therefore, it is important that their influence on patient management is assessed. Unnecessary diagnostic investigation may lead to incidental findings or to additional unnecessary diagnostic procedures or even over treatment.

Purpose of study

- (1) To evaluate the common ultrasound findings in patients with upper abdominal pain.
- (2) To correlate the ultrasound findings in patients with upper abdominal pain with age and gender.

Research methodology

This chapter describes the research design, target population, sample size and sampling technique, sources of data, method of data collection.

Research design

This study is non-experimental retrospective research design.

Target population

The target population includes all the patients that had ultrasound scan as a result of upper abdominal pain at Nnamdi Azikiwe University Teaching Hospital Nnewi Anambra State, Nigeria.

Sampling technique

The convenient method of non-probability sampling technique was used. Yaro Yamane formula was used.

Sample size

A total of 392 patients data were retrieved and reviewed from their sonographic reports from January 2013-January 2014. It was the period that the department started keeping ultrasound report.

Source of data/material for the study

The source of data for this study was an ultrasound reports in Nnamdi Azikiwe University Teaching Hospital Nnewi Anambra state.

Method of data collection

The data was collected from existing reports in the retrieved files. The following data were collected from the patient's reports

- The patient's sex
- The patient's age
- The ultrasound report/diagnoses

Selection criteria

Inclusion criteria:

All cases with history of upper abdominal pain.

Exclusion criteria:

Pregnant women with history of upper abdominal pain.

All cases with history of lower abdominal pain.

Data analysis: The data collected was analyzed using SPSS version 20.0.

TABLE 1: Age Distribution Of Sonographic Findings In Patients With Upper Abdominal Pain.

Age range	Frequency	Percentage
0-5	8	2.0
6-10	9	2.2
11-15	12	3.0
16-20	10	2.6
21-25	23	5.9
26-30	29	7.4
31-35	32	8.2
36-40	37	9.5
41-45	34	8.7
46-50	29	7.4
51-55	33	8.4
56-60	39	9.9
61-65	24	6.1
66-70	23	5.9
71-75	16	4.1
76-80	11	2.8
81-85	9	2.3
Patients without age	14	3.6
Total	392	100.0

Table 1: Shows that upper abdominal pain occurs most in 56-60years age groups 9.9% (n=39). The least is 2.0% (n=8) for 0-5years age group. Others are as follows 36-40 years age group 9.5%(n=37), 8.7%(n=34) for 41-45 years age group, 8.4%(n=33) for 51-55 years age group, 8.2%(n=32) for 31-35 years age groups, 7.4%(n=29) for 26-30 years age group, 6.1%(n=24) for 61-65 years age group,

5.9%(n=23) each for 21-25 and 66-70 years age group, 4.1%(n=16) for 71-75 years age group, 3.0%(n=12) for 11-15 years age group, 2.8%(n=11) for 76-80 years age group, 2.2%(n=9) for 6-10 years of age group, 2.3%(n=9) for 81-85 years of age group, 2.6% (n=10) for 16-20 years of age group, 3.6%(n=14) for patients whose ages were not recorded in the retrieved files.

TABLE 2: Organ distributions of cases in patients with upper abdominal pain and their percentages

Organ	Males	Females	Frequency	Percentage
Liver	67	91	158	40.4
Kidney	77	65	142	36.2
Gallbladder	13	15	28	7.1
Pancreas	1	1	2	0.5
Spleen	20	28	48	12.2
Normal study	10	4	14	3.6
Total	188	204	392	100

Table 2: Shows that liver has the highest pathologies 40.4% 158(n=158) and pancreas has the least 0.5 % (n=2). Others are as followed 36.2

%(n=142) kidney, 12.2% (n=48) spleen, 7.1% (n=28) gallbladder, and 3.6% (n=14) normal studies.

Figure 1: The bar chart represent the organ distribution and their gender.

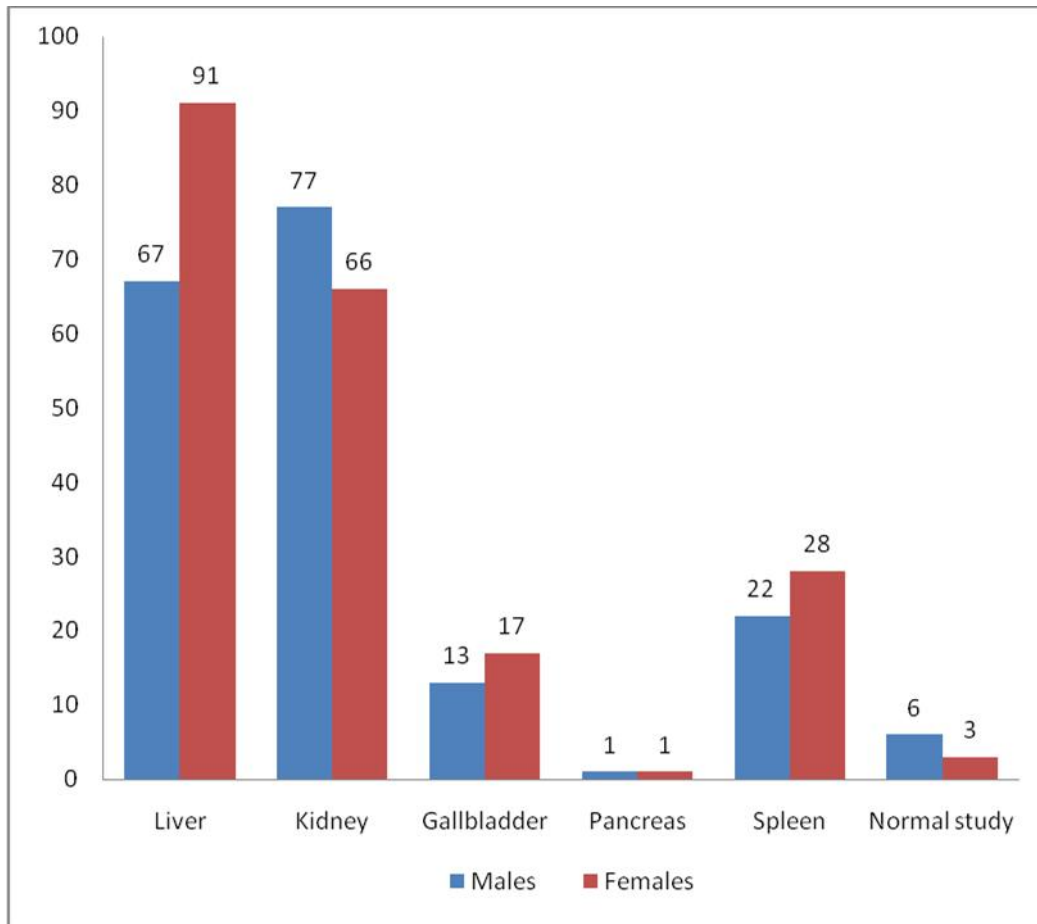


TABLE 3: Sonographic Pathologies in Patients with Upper Abdominal Pain and Their**Gender Distributions**

Sonographic findings	Male (s)	Female (s)	Frequency	Percentage
Fatty liver	53	76	129	33.0
Liver cirrhosis	8	7	15	3.8
Liver abscess	1	0	1	0.3
Hepatoma	2	1	3	0.8
Hepatic cyst	2	4	6	1.5
Hepatic mass	0	2	2	0.5
Hepatitis	0	1	1	0.3
Hepatocitis	1	0	1	0.3
Renal agenesis	1	1	2	0.5
Pyelonephrosis	1	0	1	0.3
Nephroblastoma	2	0	2	0.5
Wilm's tumor	0	1	1	0.3
Hydronephrosis	14	18	32	8.2
Grade1renal parenchymal disease	12	4	16	4.1
Grade2 renal parenchymal disease	8	7	15	3.8
Grade3 parenchymal renal disease	6	1	7	1.8
Nephrolithiasis	15	11	26	6.5
Renal cyst	11	8	19	4.7
Renomegaly	1	3	4	1.0
Polycystic kidney	1	4	5	1.3

Pyelonephritis	1	1	2	0.5
Renal failure	2	0	2	0.5
Nephropathy	0	1	1	0.3
Renal carcinoma	2	2	4	1.0
Renal hypertension	0	1	1	0.3
Cholelithiasis	9	15	24	6.1
Gallbladder mass	1	0	1	0.3
Cholecystomegaly	0	1	1	0.3
Cholecystitis	3	1	4	1.0
Splenomegaly	19	26	45	11.4
Asplenia	2	1	3	0.8
Splenic cyst	0	1	1	0.3
Splenocitis	1	0	1	0.3
Normal studies	9	5	14	3.6
Total	188	204	392	100

Table 3. Shows that the highest sonographic findings in patients with upper abdominal pain is fatty liver with 33% (n=129) and the least is 0.3% (n=1) for liver abscess, hepatitis, hepatocitis, pyelonephrosis, wilm's tumor, nephropathy, renal hypertension, gallbladder mass, cholecystomegaly, splenic cyst and splenocitis. Others are as follows 11.5% (n=45) for

splenomegaly, 8.2% (n=32) for hydronephrosis, 6.6% (n=26) for nephrolithiasis, 6.2% (n=24) for cholelithiasis, 4.1% (n=16) for grade 1 renal parenchymal disease, 3.8% (n=15) for grade2 renal parenchymal disease and liver cirrhosis, 2.3% (n=9) for normal study, 1.7% (n=7) for grade3 renal parenchymal disease and 1.0% (n=4) for renomegaly and cholecystis

Figure 2: The bar chart shows height of the most common pathologies of the upper abdominal organs.

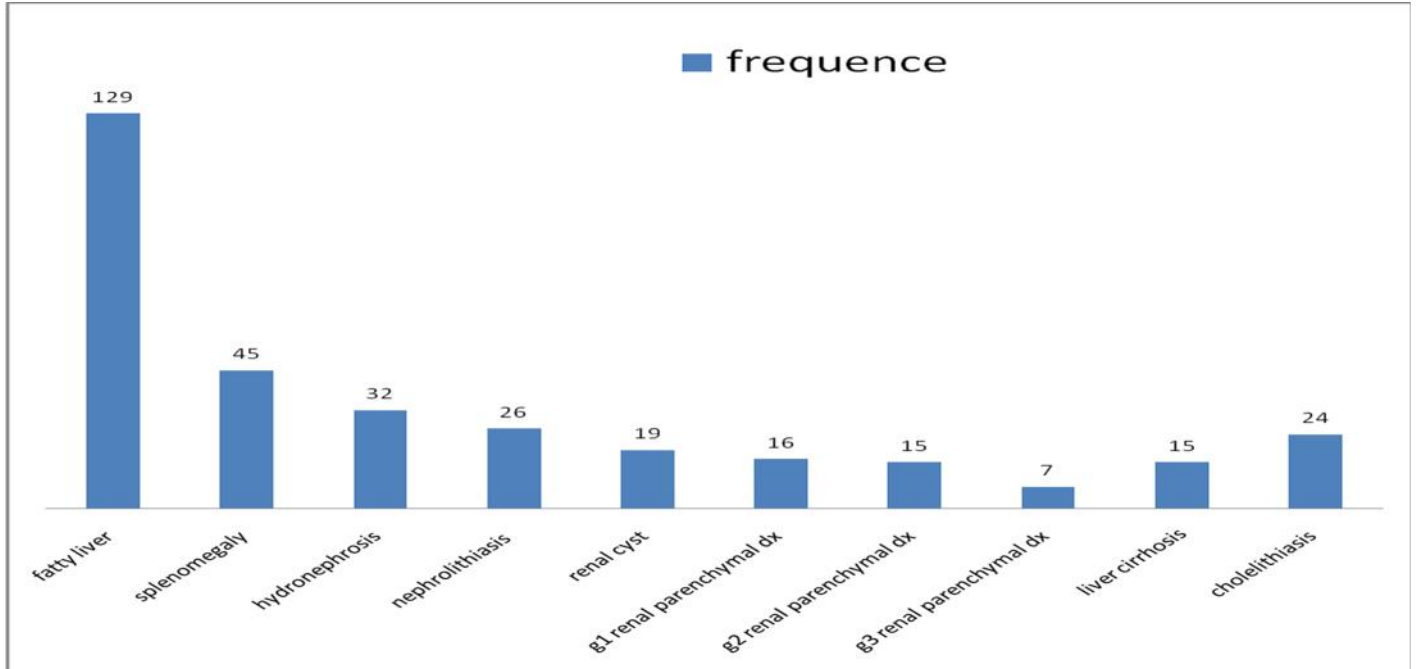


Figure 3: The pie chart shows the percentage of the most common pathologies of upper abdominal organs.

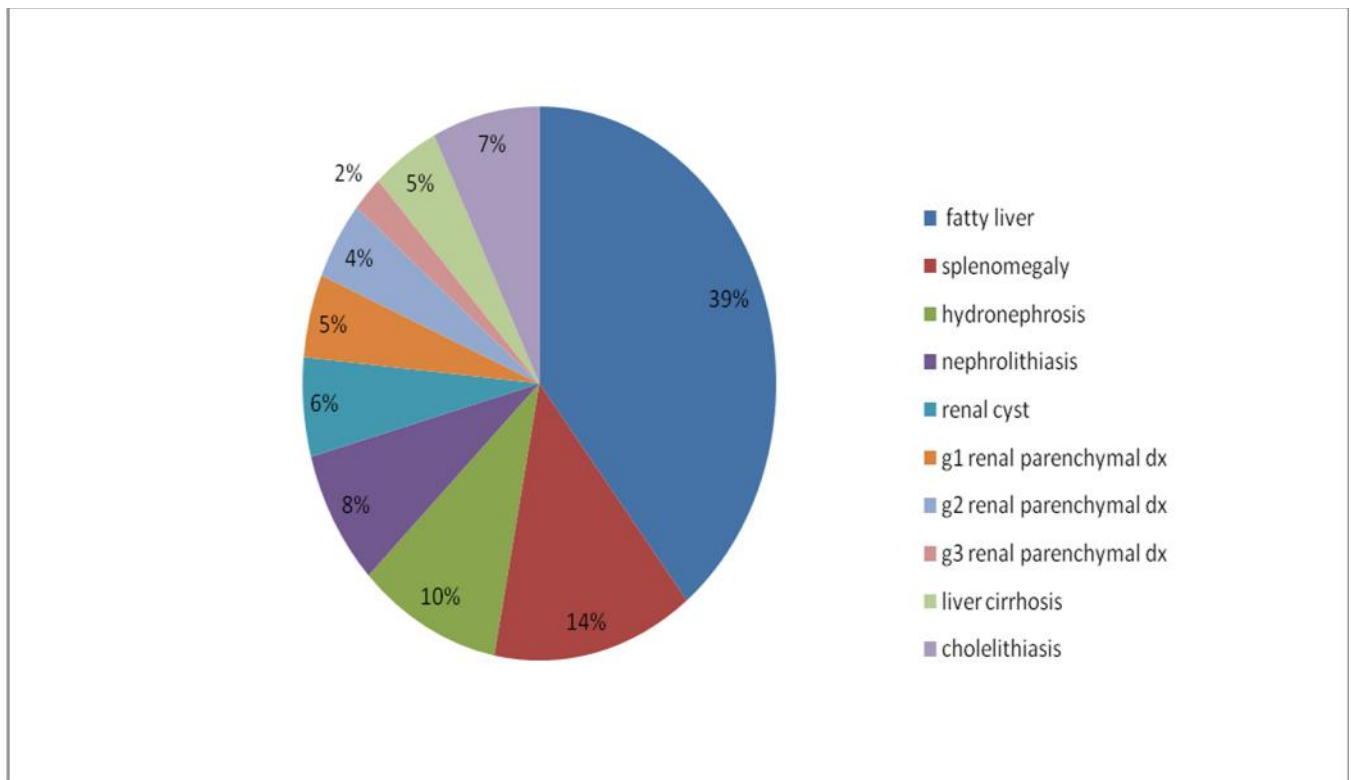


TABLE4. The Result Of Clinical Findings On Gender Of Patients.

Findings	Male(n=188)	Female(n=204)	p-value
Fatty liver	0.373±0.486	0.481±0.501	0.060
Liver cirrhosis	0.056±0.231	0.044±0.206	0.634
Liver abscess	0.007±0.839	0.000±0.000	0.292
Hepatoma	0.014±0.118	0.006±0.080	0.502
Hepatic cyst	0.014±0.118	0.025±1.578	0.489
Hepatitis	0.000±0.000	0.006±0.080	0.181
Hepatocitis	0.007±0.084	0.000±0.00	0.344
Absent kidney	0.007±0.084	0.013±0.112	0.292
Pyelonephrosis	0.007±0.084	0.000±0.000	0.627
Nephroblastoma	0.014±0.118	0.000±0.000	0.292
Wilmstumour	0.000±0.000	0.0063±0.063	0.135
Hydronephrosis	0.099±0.299	0.114±0.319	0.344
G1RPDx	0.081±0.280	0.0255±0.158	0.023*
G2RPDx	0.056±0.231	0.044±0.206	0.634
G3RPDx	0.042±0.202	0.006±0.080	0.040*
Nephrolithiasis	0.106±0.308	0.0696±0.2199	0.342
Renal cyst	0.078±0.268	0.0506±0.220	0.270
Renomegaly	0.007±0.084	0.019±0.137	0.369
Polycystic kidney	0.007±0.084	0.032±0.176	0.129
Pyelonephritis	0.007±0.084	0.063±0.080	0.940
Renal failure	0.014±0.118	0.000±0.000	0.135
Renal agenesis	0.000±0.000	0.0063±0.80	0.344
Nephropathy	0.014±0.118	0.0130±0.112	0.915
Renal carcinoma	0.000±0.000	0.063±0.080	0.344
Renalhypertrophy	0.042±0.504	0.019±0.137	0.577
Cholelithiasis	0.063±0.245	0.0949±0.294	0.316
Gall bladdermass	0.007±0.084	0.000±0.000	0.291
Cholecystomegaly	0.000±0.000	0.0063±0.080	0.344
Cholecystitis	0.021±0.144	0.0063±0.080	0.266
Pancrease	0.007±0.084	0.006±0.080	0.940
Splenomegaly	0.134±0.342	0.1646±0.372	0.458
Absent spleen	0.0141±0.134	0.006±0.080	0.502
Splenic cyst	0.000±0.000	0.063±0.080	0.344
Splenocitis	0.0070±0.084	0.000±0.000	0.219
Normal	0.0423±0.202	0.0190±0.137	0.240

*=significant $p < 0.05$

The result in the table showed that G3RPDx and G1RPDx were significantly increased in male

than female $p < 0.05$ while the others findings are similar.

Discussion

Various researches have been carried out in ultrasound to denote the common findings in patients with upper abdominal pain. In the present study, carried out at Nnamdi Azikiwe University Teaching Hospital includes age distribution, organ distribution and pathology findings. The result showed that liver was the most affected organ in patients with upper abdominal pain with 40.4% (n=158), followed by kidney 36.2% (n=142), spleen 12.2% (n=48), gallbladder 7.1% (n=28) and the least affected organ was pancreas 0.5% (n=2). The study also showed that the most common findings in patient with upper abdominal pain were fatty liver 33.0% (n=129), followed by splenomegaly 11.4% (n=45), hydronephrosis 8.2% (n=32), nephrolithiasis 6.5% (n=26) and cholelithiasis 6.1% (n=24). This is in agreement with the work done by Mir Ali *et al.* (2000). This shows that the most common cause of upper abdominal pain was Fatty liver.

Furthermore, the age range of 56-60 years was mostly affected with upper abdominal pain, followed by 36 – 40 years and 41 – 45 years age group and the least affected age group were 0-5, 16-20 and 81-85. Also it showed that female 52.0% (n=204) were mostly affected with upper abdominal pain than males 47.9% (n=188). These findings do not agree with the research work done by Okike (2010) which showed that 61-70 years age group were mostly affected with abdominal pain and 81-90 years group were the least affected and females were mostly affected.

The variability in these results may depend on some factors like the pathology of interest, environmental factors, the geographical location where the scanning was done and the competency of the sonographer.

Conclusion

Based on this study, the most common findings in patients with upper abdominal pain were fatty liver, splenomegaly and hydronephrosis. Also, the liver showed to be the most affected organ, while pancreas was the least. Furthermore, the findings showed higher frequency in female than male patients. However, the result showed that patients

within the age range 56-60 were mostly affected with upper abdominal pain and the least affected was 0-5 years.

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