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Original Research Article

Sonographic features of pelvic pain among adults in a Nigerian population

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ABSTRACT

Background: Pelvic pain is abdominal pain located below the level of umbilicus, including frequent lower back pain with or without radiation to the thighs. The aim of this study was to evaluate the common ultrasound findings in subjects with pelvic pain.
Methods: It was a retrospective study and involved collection of information from the folders of the subjects. A total of 820 folders were used for this study. Information collected from these folders included; the age, sex, provisional diagnosis and ultrasound findings. Data collected was arranged and statistical package for social sciences (SPSS) version 20 was used for analysis. Descriptive statistics was used and results arranged in frequency tables and percentages.
Results: The result showed that males were 160 (20%) and females were 660 (80%). The age ranged from < 20years to 70 years and above. The mean age of the subjects was 35.66±15.82 years. The mean age of the male is 51.83±21.56 years and that of the females is 31.77±11.02 years. Normal scan was the predominant ultrasound finding. The most common pathological finding was uterine fibroid (21.3%) and followed by pelvic inflammatory disease (15.2%).
Conclusions: Ultrasound is an essential tool in the diagnosis of pelvic pain in males and females. Uterine fibroid was the most common pathological finding in females while benign prostate hypertrophy was the most common in males.

Keywords: Pelvic, Pain, Sonography, Subjects, Evaluation, Nigeria

INTRODUCTION

Pelvic pain is abdominal pain located below the level of umbilicus, including frequent lower back pain with or without radiation to the thighs.[1] Pelvic pain could be acute or chronic. Acute pelvic pain generally implies pain that is less than three months duration in a toxic ill appearing and unstable patient or chronic pain that is worsening.[2,3] Acute pelvic pain is a common presenting complaint in women. The diagnosis of pelvic pain in women can be challenging because many symptoms and signs are intensive and unspecific.[4] Imaging has been found to be useful in the narrowing of the differential diagnosis of pelvic pain.[5] Prompt diagnosis and effective management prevents complications and may help preserve fertility.[6] It is dependent on several factors such as prevalence of contributing factors of different aetiologies, health seeking behavior, availability of diagnostic facilities, different medical practice, the distance to the medical facility and the profile of the patient in a certain area. When a female in the reproductive age presents with acute pelvic pain and/or lower abdominal pain, the first diagnosis to consider are those that are life threatening and would require urgent and/or emergency surgical intervention.[7] Although pain quality and severity are nonspecific, they may provide some clues about the aetiology. Abrupt and severe pain is typically associated with perforation (ectopic pregnancy), strangulation (ovarian torsion) or haemorrhagic (ovarian cyst). Dysmenorrhoea and abortion may be associated

with cramp-like pain. Colic pain typifies ovarian torsion or nephrolithiasis. Burning or aching pain often occurs with inflammatory process such as appendicitis or tubo ovarian abscess and pelvic inflammatory disease.[8,9] Progressively worsening pain would suggest visceral inflammation or perforation.[8] The role of ultrasonography in diagnosing pelvic pain cannot be overemphasized. The goal of imaging is to make most accurate diagnosis using the least amount of radiation.[10] Ultrasound, particularly transvaginal ultrasound (TVS) remains the primary diagnostic instrument of choice. Trans-abdominal sonography is also essential and allows the operator to localize and orientate the uterus and ovaries and also affords visualization of the organs of the wider pelvis and any large masses.[11] Other modalities may play a key supplementary role where available.[10] High resolution ultrasound provides specific features of acute appendicitis. The inflamed appendix is widened and may be detected (diameter > 6mm). It is useful in doubtful cases especially when gynaecological problems are to be excluded.[10] The aim of this study is to evaluate the common ultrasound findings in subjects with pelvic pain.

METHODS

This was a retrospective study carried out in the radiology department of Nnamdi Azikiwe University teaching hospital, Nnewi, Anambra state. The study was conducted after obtaining an approval from the ethical committee of the hospital. Data was collected from the existing records of the patients in the department from July 2019 to September 2019. The procedure involved collecting the patient's folder and checking the report following the ultrasound investigation. The inclusion criteria for this study included obtaining the following information from the patient's folder; age of patient, sex, provisional diagnosis (clinical information) and the sonographic finding. In a situation where any of the information lacked such were excluded from the study.

Statistical analysis

Data was analyzed using the statistical package for social sciences (SPSS) version 20. Descriptive analysis was done and results were presented in percentages and frequency tables.

RESULTS

This revealed that there were 820 subjects whose ultrasound reports were evaluated during this study. Most of the sonographic findings were normal, constituting 32.8% (269). The major pathological finding detected was uterine fibroid (21.3%) and followed by pelvic inflammatory disease (15.2%). The least occurring were ceacal cancer (0.1%) and pyometra (0.1%). Total 660 (80%) were females while 160 (20%) were males (Table 1). Normal scan contributed to 32.8% of the features observed. The most common pathological finding is uterine myoma (21.3%) and followed by pelvic inflammatory disease (15.2%).

Table1: Distribution of common ultrasound findings in patients with pelvic pain according to gender.

Findings	Gender based results		
	Males N (%)	Females N (%)	Total N (%)
Normal scan	56 (6.8)	213 (26)	269 (32.8)
Ectopic pregnancy	0 (0.0)	6 (0.7)	6 (0.7)
Uterine myoma	0 (0.0)	175 (21.3)	175 (21.3)
Hydrosalpinx	0 (0.0)	3 (0.4)	3 (0.4)
Appendicitis/appendix mass	6 (0.7)	28 (3.4)	34 (4.1)
Pelvic inflammatory disease (PID)	0 (0.0)	125 (15.2)	125 (15.2)
Endometritis	0 (0.0)	9 (1.1)	9 (1.1)
Benign prostatic hypertrophy (BPH)	72 (8.8)	0 (0.0)	72 (8.8)
Intussusception	1 (0.1)	0 (0.0)	1 (0.1)
Gastroenteritis /bowel enteritis	1 (0.1)	4 (0.5)	5 (0.6)
Caecal cancer	0 (0.0)	1 (0.1)	1 (0.1)
Bladder stone	5 (0.6)	2 (0.2)	7 (0.9)
Adnexa cysts	0 (0.0)	63 (7.7)	63 (7.7)
Intestinal obstruction	4 (0.5)	5 (0.6)	9 (1.1)
Bowel / colonic mass	4 (0.5)	2 (0.2)	6 (0.7)
Cystitis	3 (0.4)	2 (0.2)	5 (0.6)
Endometrial hyperplasia	0 (0.0)	5 (0.6)	5 (0.6)
Prostate cancer	3 (0.4)	0 (0.0)	3 (0.4)
Tubo-ovarian abscess	0 (0.0)	4 (0.5)	4 (0.5)
Hernia	3 (0.4)	2 (0.2)	5 (0.6)
Cervical cancer	0 (0.0)	3 (0.4)	3 (0.4)
Endometroma	0 (0.0)	2 (0.2)	2 (0.2)
Mucinous cystadenoma	0 (0.0)	2 (0.2)	2 (0.2)
Polycystic ovarian syndrome	0 (0.0)	3 (0.4)	3 (0.4)
Pyometra	0 (0.0)	1 (0.1)	1 (0.1)
Bladder mass	2 (0.2)	0 (0.0)	2 (0.2)
Total	160 (19.5)	660 (80.5)	820 (100.0)

The age distribution of the subjects (Figure 1). There were more subjects within the age range of 20-29 years, followed by the age range of 30-39 years. The least range was recorded within 60-69 years. The mean age of the

subjects was 35.66±15.82 years. The mean age of the male subjects was 51.83±21.56 years while that of the females was 31.77±11.2 years.

Table 2: Distribution of common ultrasound findings in patients with pelvic pain according to age range.

Findings	Age range (years), N (%)							Total
	<20	20-29	30-39	40-49	50-59	60-69	>70	
Normal scan	29 (3.5)	108 (13.2)	74 (9.02)	34 (4.1)	11 (1.3)	8 (1.0)	5 (0.6)	269 (32.8)
Ectopic pregnancy	0 (0.0)	3 (0.4)	3 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (0.7)
Myoma	0 (0.0)	34 (4.1)	88 (10.73)	44 (5.4)	7 (0.9)	1 (0.1)	1 (0.1)	175 (21.3)
Hydrosalpinx	0 (0.0)	3 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (0.4)
Appendicitis/appendix masses	9 (1.1)	18 (2.2)	4 (0.49)	2 (0.2)	1 (0.1)	0 (0.0)	0 (0.0)	34 (4.1)
Pelvic inflammatory disease	13 (1.6)	69 (8.4)	34 (4.15)	7 (0.9)	1 (0.1)	1 (0.1)	0 (0.0)	125 (15.2)
Endometritis	0 (0.0)	3 (0.4)	3 (0.4)	3 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	9 (1.1)
Benign prostatic hypertrophy	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	14 (1.7)	20 (2.4)	38 (4.6)	72 (8.8)
Intussusceptions	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)
Gastroenteritis/bowel enteritis	3 (0.4)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	5 (0.6)
Caecal cancer	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)
Bladder stone	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.24)	3 (0.4)	2 (0.24)	0 (0.0)	7 (0.9)
Adnexa cysts	3 (0.4)	31 (3.8)	20 (2.44)	6 (0.7)	2 (0.24)	1 (0.1)	0 (0.0)	63 (7.7)
Intestinal obstruction	1 (0.1)	2 (0.24)	2 (0.24)	0 (0.0)	2 (0.24)	1 (0.1)	1 (0.1)	9 (1.1)
Bowel / colonic masses	1 (0.1)	1 (0.1)	1 (0.1)	2 (0.24)	0 (0.0)	1 (0.1)	0 (0.0)	6 (0.7)
Cystitis	0 (0.0)	0 (0.0)	2 (0.24)	0 (0.0)	1 (0.1)	1 (0.1)	1 (0.1)	5 (0.6)
Endometrial hyperplasia	0 (0.0)	5 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (0.6)
Prostate cancer	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	1 (0.1)	1 (0.1)	3 (0.4)
Tubo-ovarian abscess	0 (0.0)	3 (0.4)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.5)
Hernia	0 (0.0)	3 (0.4)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	5 (0.6)
Cervical cancer	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.24)	1 (0.1)	0 (0.0)	3 (0.4)
Endometroma	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	2 (0.2)
Mucinous cystadenoma	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	2 (0.2)
Polycystic ovarian syndrome	0 (0.0)	3 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (0.4)
Pyometra	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)
Bladder mass	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	2 (0.2)
Total	60 (7.)	289 (35)	232 (28.9	104 (127	48 (5.)	40 (4.0	47 (5.7)	820 (100)

The distribution of sonographic findings according to age group is shown in (Table 2). It revealed that myoma (10.7%) was the most occurring pathological finding and was detected mainly within the age range of 30-39 years. PID which is the next was observed mainly within the age range of 20-29 years and constituted about 4.1%. Benign prostate hypertrophy was seen mainly at 70 years and above. The sonographic findings according to the organs involved (Table 3). The uterus (58.62%) was the most affected organ followed by the ovary (14.16%)

DISCUSSION

Finding from this study revealed that more females were involved more than the males. This finding is in agreement with some other previous studies.[12,13] Long stated that men rarely experience pelvic discomfort, while women frequently do and this may be the reason why our study also revealed that females were more affected.

In this study, eight hundred and twenty subjects were reviewed and their age ranged from < 20 years to above 70 years. The mean age of the subjects was 35.6±15.82. This does not agree with some previous studies that recorded 31years and 29.9 years respectively.[12,14] This discrepancy may be because these other studies evaluated pelvic pain among females only while ours included males. The most common age group involved in our study was 20-29 years. Luntsi et al reported 30-39 years.[14] In the present study, normal ultrasound scan result was seen in majority of the cases, 269 (32.8%). The

ability of ultrasound to detect disease conditions depends on the stage of the disease.

Table 3: Organ distribution of sonographic findings.

Organs	N	%
Uterus	323	58.62
Colon	22	3.99
Ovary	78	14.16
Prostate	75	13.61
Appendix	34	6.17
Bladder	14	2.54
Inguinal region	5	0.91
Total	551	100.00

Sometimes scans are done at stages when the conditions may not have manifested in ultrasound and this may not mean that the condition is absent. If this occurs ordinary laboratory investigation could be done. The experience and knowledge of the sonographer may also affect findings and this may have also affected this study as ultrasound diagnosis is largely observer dependent. Some other studies had also revealed normal sonographic appearance as a finding in pelvic pain.[15] They were however not in the majority in their studies and is contrary to our findings where normal scan was in the majority.

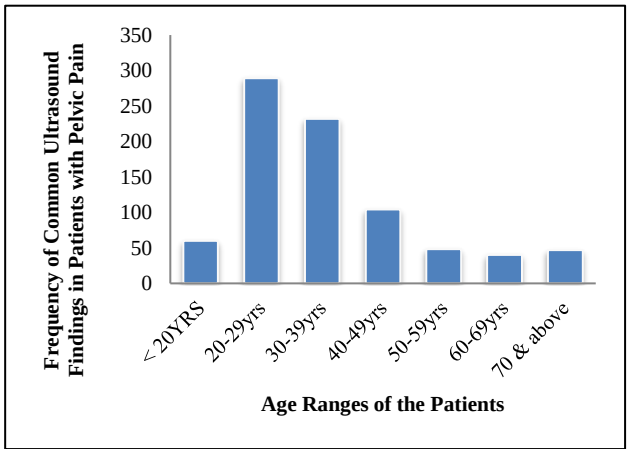

Figure 1: Subjects according to age range.

This study showed that the most common pathological finding was uterine myoma accounting for 10.7% of the cases studied. This occurred mainly within the age group of 30-39 years. Females in this part of the country do not usually marry early because they spend their early years trying to get educated and because of this implantation may not take place during these years. This may subsequently lead to the proliferation of the myometrium and may have led to the high incidence in this environment. Luntsi et al in their own study observed that PID was the most common finding and this is not line with the finding of this present study.[14] However, our finding revealed that pelvic inflammatory disease was the second most common finding. This was noted within the age range of 20-29 years. At this age range many females are sexually active and stand the chance of acquiring sexually transmitted infection which will likely increase the rate of PID if not properly treated. In a poor resource country like ours, individuals lack good toilet facilities. Some people still go to toilet in the bush and pit toilets and this may have contributed to this observation. Even in places where there are modern toilet facilities, a lot of people may be sharing them and proper cleaning may not be done with relevant cleaning agents. Benign prostate hypertrophy was the major reason for pelvic pain among men in this study. It occurred mainly within the age range of 70 years and above. The incidence of BPH increases with age and this may have accounted for elderly subjects being mainly involved. This study revealed that appendicitis was seen in 34 (4.1%) of the cases and occurred mainly within the age group of 20-29 years. Kamlesh et al in their study noted that appendicitis was most commonly involved in acute pelvic pain.[12] Appendicitis has also been noted to be the most common diagnosis among non-gynaecological disorders that cause acute pelvic pain.[10] An early positive diagnosis of appendicitis allows prompt surgical intervention to avoid rupture with a negative examination preventing unnecessary surgical intervention.[16,17]

CONCLUSION

The most common sonographic finding noted in this study is normal appearance of the pelvic organs. Uterine myoma is the most common pathological finding followed by PID. Females were more affected than males.

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