

ORIGINAL RESEARCH ARTICLE

ULTRASOUND EVALUATION OF ACUTE PELVIC PAIN IN NON-PREGNANT REPRODUCTIVE AGE FEMALES

Prabhat Basnet^{1,*}, Pramod Kumar Chhetri¹

¹Department of Radiology, College of Medical Sciences, Bharatpur Nepal

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**Correspondence to: Prabhat Basnet, Department of Radiology, College of Medical sciences, Bharatpur Chitwan, Nepal.*

Email: pbasnet99@gmail.com

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ABSTRACT

Background: Ultrasound is one of the best tools for the scanning of the female pelvis. It is easy to operate and very helpful in acute condition to rule out different lower abdominal pathology. Ultimately fast and accurate diagnosis of the pathology by ultrasound is key to further management and treatment. The aim of present study was to find the common causes of the acute pelvic pain in the non-pregnant reproductive age females.

Methods: The study was conducted in Department of Radiology and Imaging of college of medical sciences. Patients with acute pelvic pain of reproductive age non-pregnant female are included in our study. All ultrasound examinations were performed using Toshiba Aplio 500. A prospective cross-sectional study was conducted on 48 patients in college of medical science, Bharatpur, over the period of one year (November 2018 to October 2019). Data obtained were compiled and analyzed using standard statistical analysis. Statistical Package for the Social Sciences (SPSS) version 20.0 and Microsoft Excel were used for the data analysis and presentation

Results: Present study showed the most common cause of acute pelvic pain to be ovarian cysts in which 20.8% were hemorrhagic cysts, followed by corpus luteal cyst (14.58%) and endometrioma (12.50%). Non-gynecological case like cystitis, acute appendicitis and ureteric calculus were seen in equal number which is 10.41% each. Similar way ovarian torsion and pelvic inflammatory disease were seen in 8.33 and 4.10% respectively. In 8.33% cases no diagnosis was made.

Conclusions: Ultrasound plays a crucial role in diagnosis of the acute pelvic pain in female. It helps in rapid assessment and immediate decision making for operative planning.



INTRODUCTION

Acute pelvic pain in female are commonly encountered in our day to day practice. It requires prompt diagnosis for both surgical and medical management of the disease. There are various structures in pelvis which can lead to pelvic pain among them ovaries are the most important in females. Prompt diagnosis allows potentially ovary-sparing or life-saving surgery.¹ Approximately 1.4 million gynecologic visits were made to emergency departments annually, for an average annual rate of 24.3 visits per 100 women between the ages 15 to 44 years.² Acute pelvic pain generally implies pain that is of less than 3 months duration in a toxic, ill appearing and unstable patient, or chronic pain that is worsening for more than 3 months.³ Acute surgical abdomen require urgent surgical attention. The objective of emergency operation is to interrupt a process that has a steadily worsening prognosis on a scale of hours unless effective surgical treatment is rendered.⁴

Considering the organ located in pelvis and abdominal cavity whose pain may be referred to the pelvis (i.e. the gall bladder, the appendix, cecum, ascending colon, transverse colon, descending colon, sigmoid, rectum, kidneys, ureter, bladder, uterus, ovaries and fallopian tubes), we have to consider that

the diseases most likely originate from these organs. Given such a vast differential diagnosis, the key investigative tool for acute lower abdominal and pelvic pain is the ultrasound.⁵⁻¹² The aim of present study was to find the common causes of the acute pelvic pain in the non-pregnant reproductive age females.

METHODS

The study was conducted in Department of Radiology and Imaging of college of medical sciences from November 2018 to October 2019. All USG examination were done using Aplio 500 Toshiba Machine with convex array deep probe of frequency 3.5MHZ and superficial probe of 10MHZ. The Ultrasound findings are correlated with clinical and laboratory findings. Patient presenting with acute pelvic pain of reproductive age group (15-49years) non-pregnant female referred from Gynecology OPD and emergency department which are sent for the ultrasound examination are included in our study. Based on sonographic findings provisional diagnosis was made, which was confirmed by operative findings/therapeutic response/FNAC findings/Histopathological/Laboratory findings. Age less than 15years and age more than 49 years and pregnant females and trauma patients are excluded in our study. Data obtained were compiled and analyzed using standard statistical analysis. Short for statistical data analysis (SPSS) version 20.0 and

Microsoft Excel were used for the data analysis and presentation. The research protocol was submitted and approved by the ethical review committee of college of medical sciences, Nepal.

RESULTS

Total 48 non-pregnant female patients were included in our study of reproductive age group (15-49years) presenting with acute pelvic pain. Hemorrhagic cyst was the most common diagnosis for acute pelvic pain in females followed by corpus luteal cyst, endometrioma, cystitis, acute appendicitis, ureteric calculus, ovarian torsion, pelvic inflammatory disease. No ultrasonic diagnosis could be made in 4 patients

Table 1: Diagnosis of pelvic pain in non-pregnant reproductive females

Diagnosis of pelvic pain in non-pregnant reproductive females	n (%)
Hemorrhagic cyst	10 (20.83%)
Corpus luteal cyst	7 (14.58%)
Endometrioma	6 (12.50%)
Cystitis	5 (10.41%)
Acute appendicitis	5 (10.41%)
Ureteric calculus	5 (10.41%)
Ovarian Torsion	4 (8.33%)
Pelvic inflammatory disease	2 (4.16%)
No diagnosis	4 (8.33%)
Total cases	48 (100%)

Table 2: Comparison of our study with different other studies

Diagnosis	Present study (48)	Anteby(223) ¹³	Moriono (104) ¹⁴	Gaitan (110) ¹⁵	Kontoravidis (736) ¹⁶
Ovarian cysts	35.41%	27%	12%	14%	2%
Endometrioma	12.5%	3%	2%	7%	16%
cystitis	10.41%	-	-	-	-
Acute appendicitis	10.41%	3%	18%	2%	-
Ureteric calculus	10.41%	-	-	-	-
Ovarian torsion	8.3%	10%	-	-	-
Pelvic inflammatory disease	4.16%	21%	19%	55%	23%
No diagnosis	8.33%	12%	37%	8%	8%

Acute appendicitis and ureteric calculus are also seen in 10.41% in each in our study. Other study done by Morino et al¹⁴, Anteby et al¹³ and Gaitan et al¹⁵ showed acute appendicitis in 18, 3 and 2% respectively. Acute appendicitis is caused by progressive increase in intraluminal pressure that occurs when the appendix is blocked by hardened fecal matter (fecolith) which leads to a compromise in venous outflow, ischemic injury, stasis of luminal contents which progresses to inflammation, infection, necrosis and finally perforation. Ureteric calculus causes acute pelvic pain, hematuria, dysuria and vomiting. The lifetime prevalence of ureteric calculi is relatively high, occurring in approximately 12% of men and 7% of women.¹⁹ Most patients present between ages 30 and 60 years, with peak incidence between ages 35-45.²⁰ Initial calculus presentation occurring past age 50 is uncommon.

DISCUSSION

Present study showed most common diagnosis made in acute pelvic pain are ovarian cysts in which hemorrhagic cysts were most common (20.83%), followed by corpus luteal cyst (14.5%) and endometrioma (12.5%). Hemorrhage into the follicular cyst give rise to hemorrhagic cyst and same way if hemorrhage occurs in the corpus luteal cyst it is hemorrhagic corpus luteal cyst. The hemorrhage generate acute pelvic pain. In endometrioma, also known as chocolate cyst there is ectopic presence of the endometrial tissue in ovaries which is estrogen sensitive and it proliferate and bleeds synchronously with endometrium. Present study is similar to the study conducted by the Anteby et al¹³ conducted in Department of Obstetrics and Gynecology, Hadassah University Hospital, Jerusalem, Israel, which showed ovarian cyst being the most common diagnosis (27%). The other studies done by Morino et al¹⁴, Gaitan et al¹⁵ and Kontoravdis et al¹⁶ showed the diagnosis of the ovarian cyst in acute pelvic pain to be 12, 14 and 2% respectively (Table 2).

Cystitis was seen in 10.41% case in our study. Cystitis is the inflammation of urinary bladder and it is a part of urinary tract system. Nearly 1 in 3 women will have had at least 1 episode of UTI requiring antimicrobial therapy by the age of 24 years. Almost half of all women will experience UTI once during her lifetime.¹⁷ Approximately 24 to 40% of women in the United States between the ages 20 to 40 have had urinary tractinfections.¹⁸

Ovarian torsion and pelvic inflammatory disease were seen in 8.33% and 4.16% respectively in our study. The primary pathology invariably involves an enlarged ovary. Torsions lead to strangulation compromising blood flow, initially venous, then arterial blood flow, ultimately leading to ischemia and necrosis.²¹ The study done by Anteby et al¹³ showed 10.0% ovarian torsion presenting with acute pelvic pain in reproductive age non-pregnant females. Pelvic inflammatory disease refers to the infection of the upper female genital tract (uterus, fallopian tubes, oviducts and ovaries) caused by ascending spread of bacteria from the vagina or cervix.²² The study conducted by Gaitan et al¹⁵, Kontoravdis et al¹⁶ and Morino et al¹⁴ showed most common diagnosis of pelvic inflammatory disease which is 55%, 23 and 19% respectively. The study conducted by Anteby et al¹³ showed the most common diagnosis of ovarian cyst followed

by pelvic inflammatory disease. But our study showed pelvic inflammatory disease is least common diagnosis made in acute pelvic pain females which contradicts above mentioned study.

In 8.33% cases no diagnosis could be made in patients presenting with acute pelvic pain by ultrasound examination. It is also seen in studies conducted by Morino et al¹⁴, Anteby et al¹³, Gaitan et al¹⁵ and Kontoravdis et al¹⁶ in which 37.0, 12.0, 8.0 and 8.0% cases have no diagnosis in females presenting with acute pelvic pain.

CONCLUSION

Ultrasound is widely used modality for diagnosis of acute pelvic pain. It is very useful in emergency setup where it helps in rapid evaluation and decision making for operative or medical treatment planning. It has no radiation hazards and does not require preparation before scanning, that makes it further useful.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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