

Correlation between Clinical Pelvic Pain in Female and its Related Ultrasound Findings among Sudanese Population

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Abstract

Introduction: Pelvic pain is pain in the lowest part of your abdomen and pelvis. In women, pelvic pain may refer to symptoms arising from the reproductive or urinary systems or from musculoskeletal sources. Depending on its source, pelvic pain may be dull or sharp; it may be constant or off and on (intermittent); and it may be mild, moderate or severe. Pelvic pain can sometimes radiate to your lower back, buttocks or thighs. Pelvic pain can occur suddenly, sharply and briefly (acute) or over the long term (chronic).

Objectives: To correlate clinical characteristic of pelvic pain in female with the ultrasound findings.

Materials & Methods: The study was observational, analytical cross sectional study, carried out in ultrasound department of different hospitals and centers in Khartoum - Sudan where 100 samples were collected randomly from female patients of different age's groups.

Results: The diseases diagnosed by ultrasound have its characteristic like, uterine fibroid mostly occur in age group (31-45) years, it has moderate, central location pain, tender nature and chronic onset duration. Hemorrhagic ovarian cysts mostly occur in age group (31-45) years, they have severe, constant pain with unilateral location on the side of cyst, tender nature and acute on set duration and the pain accompanying with vaginal discharge

Conclusion: Pelvic pain in females comes with different severity, locations, character, nature and different on set duration. The variations in characteristic of pain it's due to different type of diseases.

Recommendation: Using good ultrasound equipment with Doppler capability to obtain accurate diagnosis. Availability of transvaginal ultrasound in all gynecological and obstetrical departments to decrease chance of missed diagnosis which may occur with using of transabdominal ultrasound only.

Keywords: Pelvic Pain, Sudanese Population etc.

1. Introduction

Pelvic pain is pain in the lowest part of abdomen and pelvis. In women, pelvic pain may refer to symptoms arising from the reproductive or urinary systems or from musculoskeletal sources. ⁽¹⁾ Depending on its source, pelvic pain may be dull or sharp; it may be constant or off and on (intermittent); and it may be mild, moderate or severe. Pelvic pain can sometimes radiate to lower back, buttocks or thighs. ⁽¹⁾

Pelvic pain can occur suddenly, sharply and briefly (acute) or over the long term (chronic). Chronic pelvic pain refers to any constant or intermittent pelvic pain that has been present for more than a few months. Sometimes, pelvic pain only at certain times such during urination or during sexual activity. ⁽¹⁾

Several types of diseases and conditions can cause pelvic pain. Often chronic pelvic pain results from more than one condition. ⁽¹⁾ Pelvic pain may arise from the digestive, reproductive or urinary system. Recently, doctors have recognized that some pelvic pain, particularly chronic pelvic pain, may also arise from muscles and connective tissue (ligaments) in the structures of the pelvic floor. Occasionally, pelvic pain may be caused by irritation of nerves in the pelvis. ⁽¹⁾

Acute pelvic pain may be the manifestation of various gynecologic and non-gynecologic disorders from less alarming rupture of periovulatory follicle to more life threatening conditions like rupture of ectopic pregnancy or perforation of inflamed appendix. Locating the site of pain together with ultrasound examination of the affected area leads to prompt and accurate clinical

diagnosis. Ultrasound has become a valuable aiding tool in the approach to the patient presented with acute pelvic pain that is gynecological or non-gynecological in origin such as appendicitis or urinary stones.⁽²⁾

The non-gynecologic etiologies of pelvic pain are first the gastrointestinal etiologies: Appendicitis, Meckel's diverticulitis, Chron's disease, Mesenteric lymphadenitis, Yersinia infection and functional bowel disease. Second the urinary tract etiologies which include Infection and Obstruction the gynecologic etiologies of pelvic pain include pelvic inflammatory disease, hemorrhagic ovarian cyst, degenerating fibroids, adnexal torsion, endometriosis, pelvic congestion syndrome and ovarian vein thrombosis. The obstetrical etiologies are normal intrauterine pregnancy, spontaneous abortion, ectopic pregnancy, corpus luteum cyst, placental abruption and uterine dehiscence and rupture.⁽²⁾

The noninvasive nature, safety, and reliability of ultrasound make it the diagnostic method of choice for pregnant patients who have pelvic pain. Ultrasound provides information that allows for diagnosis of both pregnancy related pain; and may be useful in the diagnosis of pain unrelated to pregnancy.⁽³⁾

In normal pregnancy because of hormonal changes, rapid growth of the uterus, and increased blood flow, (crampy) pelvic pain is common in early pregnancy. For the prima para, this pain can be quite worrisome. It is common for pregnant patients to present with pain in the first trimester and have normal findings on ultrasound.⁽³⁾ Acute pelvic pain of sudden onset is a common clinical presentation to the emergency department and frequently generates a request for diagnostic imaging; ultrasound is the first line imaging modality.⁽⁴⁾

Chronic pelvic pain is generally defined as recurrent or constant pain of at least 3 months duration, or cyclical pain of 6 months duration, which is sufficient to interfere with normal activities. Chronic pelvic pain which is cyclical is almost always gynecologic in origin, whereas noncyclical chronic pelvic pain can have a host of other causes.⁽⁴⁾

Obtaining a clinical history which enables differentiation between acute and chronic pelvic pain and where relevant the timing of the pain in relation to the menstrual cycle, it is helpful to consider gynecological pain as pain related to periods or cyclical pain or pain unrelated to periods, first pain related to periods example dysmenorrhoea (painful menstrual periods) the pain is typically lower abdominal, supra pubic and pelvic, although it also frequently radiates through to the back and down the anterior aspects of the thighs pain associated with periods which last throughout the period, being just as painful at the end as on day one, is more likely to have an underlying cause.⁽⁴⁾

Around 10% of adolescents reporting severe dysmenorrhoea will be found to have underlying pathology Second cyclical Pain which due to ovulation. Ovulation occurs 14 days prior to the period. While ultrasound may suggest the diagnosis through the

findings of a collapsed follicle and free fluid in the pelvis, diagnosis is most usually made by suppression of ovulation by using the combined oral contraceptive pill which will result in abolition of the pain. Lastly Pain unrelated to period, acute pain unrelated to periods provides the greatest diagnostic dilemma and may be due to ovarian cyst problems, ectopic pregnancy or pelvic inflammatory disease. Chronic pain may be related to large ovarian cyst.⁽⁴⁾

2. Objectives

To correlate clinical characteristic of pelvic pain in female with the ultrasound findings

3. Materials & Methods

This study design is observational, descriptive and analytical, cross sectional study deal with finding a relationship between clinical characteristic of pelvic pain in female and its related ultrasound findings. The study was done from Feb 2014 till July 2014, in 100 patients having pelvic pain of different severity and duration.

Non-probability sampling (Quota Sample) we used pelvic pain as main criteria for selecting our participants so 100 patients having pelvic pain were included on the study. The variables was patients' age, marital status, menstrual phase, severity of pain, nature of pain during examination , characteristic of pain, onset duration of pain, location of pain, pain with vaginal bleeding, pain with vaginal discharge, past history of similar pain, past history of pelvic surgical operation, pregnancy test and ultrasound findings.

The data was collected by data collection sheet which was designed to include all study variables and by ultrasound machine like Sonoscape portable ultrasound diagnostic system, Model: A5, place of manufacturing: china, manufacturing date: January 2012. GE health care, place of manufacturing: Korea, manufacturing date: July 2008, model no 5268207 class 1. Esaote, my lab 70 x vision. Siemens, model: sonoline G 60 S. Data had been processed computerized by using statistical package for social science (SPSS).

3. Results & Discussion

Both menses and secretary phases have same percentage 13% while the proliferative phase has less value 12%, the maximum answers on answer none 62% which represent gravid uterus and these also due to fact that majority of cases are obstetrical cases.

The severity of pain 32% are in mild pain, 38% moderate and 30% are severe this variable (severity of pain) is variant and depends on way of complain of the patients, some patients exaggerate their complain they believe that if they complain more they receive more care and in contrast some patient believe that if they complain in more details the doctor will diagnosed their condition

as serious one so researcher tried to pick up the information not only from what the participant says but also from expression of their faces and body language. The researcher found strong and significant correlation between mild severity of pain and blighted ovum; all patients with blighted ovum have mild severity of pain. The location of pain, unilateral and bilateral had same percentage of occurrence are 18%, maximum value 64% is central location with exception of ovarian diseases like ovarian cyst other gynecological and obstetrical problems their pain location is central.

The character of pain, 2% crampy, 27% constant 69% intermittent, majority of participants have these type of pain character, it means on and off nature which is depend on the type of affected disease, for example researcher found patients with PID have constant pain in contrast pregnant ladies have intermittent character of pain. There is strong and significant correlation between constant character of pain and PID, also researcher found strong and significant correlation between character of pain intermittent and missed abortion.

The nature of pain during examination, majority of participants 54% feeling tender during exam while reminder 46% didn't feeling tender.

Regarding the onset duration of pain, majority of participants 64% have acute onset duration of pain while reminder 36% has chronic onset. Researcher found significant relationship between chronic onset duration of pain and degenerating uterine fibroid, PID and endometrial polyp. Also there is correlation between acute onset duration of pain and normal IUP.

Regarding vaginal bleeding, 41% participants come with vaginal bleeding which include patients have ectopic pregnancy, missed, incomplete and complete abortion, blighted ovum, endometrial polyp, uterine fibroids and abortion in progress. While the reminder 69% hasn't vaginal bleeding which include pregnant ladies, patient have: ovarian simple and hemorrhagic cysts, ureteric stones, ascites and those with normal ultrasound finding. Strong and significant correlation found between vaginal bleeding and missed and complete abortion.

The majority of participants haven't vaginal discharge 61% while reminder 39% have discharge which include patients with PID, hemorrhagic ovarian cysts, placenta previa, hydatidiform mole, there is strong correlation between vaginal discharge and PID.

From multiple correlation the researcher found uterine fibroid as ultrasound finding, most participants are in age group (31-45) years, proliferative phase is commonest phase detected during the exam, severity of pain in most participants is moderate type of pain, pain has constant character, central location, tender nature during the exam and chronic onset duration, most participants haven't neither vaginal discharge nor vaginal bleeding, half of patients have history of similar pain in the past while other half haven't. Lastly majority of patients didn't perform the pregnancy test.

With simple ovarian cyst as ultrasound finding, majority of patients are in age group (13-30) years, secretary phase is most menstrual phase detected during the exam, the patients experience different type of severity of pain from mild moderate to severe with intermittent character. Half of patient had central location of pain and acute onset duration while other half had bilateral location of pain and chronic onset duration, patients have neither vaginal bleeding nor vaginal discharge. Patients hadn't history of similar pain in the past.

With hemorrhagic ovarian cyst as ultrasound finding, most participant are in age group (31-45) years, the secretary phase is commonest phase detected during the exam, the pain has severe severity with constant character, unilateral location on the side of the cyst, tender nature and acute onset duration and majority of patients not experience it on the past. The patients have vaginal discharge but haven't vaginal bleeding and majority of patients didn't perform the pregnancy test.

With PID as ultrasound finding, half of participants in age group (13-30) years other half on age group (31-45) years, secretary phase of menstrual cycle is mostly detected phase during the exam; patients have moderate severity, constant character, central location pain with tender nature and chronic onset duration of pain. The patients had vaginal discharge but haven't vaginal bleeding and there is no past history of similar pain.

With IUP as ultrasound finding, (13-30) years most age group detected with none classification most detected on the menstrual phase which include gravid uterus. Characteristics of pain during IUP include; moderate severity, intermittent character, central location, tender nature, acute onset duration of pain with no history of similar pain on the past, not accompanying with vaginal bleeding or discharge and all patients have positive pregnancy test.

With incomplete abortion as ultrasound finding, most age group is in age group (13-30) years, most menstrual phase detected during the exam is none classification (gravid uterus). the characteristic of pain during incomplete abortion is severe pain, intermittent character, central location, acute onset duration with no history of similar pain in the past. Pain not accompanying with vaginal discharge but accompanying with vaginal bleeding and all patients have positive pregnancy test.

With complete abortion as ultrasound finding, the most age group (13-30) years, the menstrual phase; half of patient are in menses phase other half are on none category (gravid uterus). the pain characteristics; severe pain with central location, intermittent character, tender nature, acute onset duration and no history of similar pain on the past. Pain is accompanying with vaginal bleeding but not vaginal discharge. All patients have positive pregnancy test.

With missed abortion as ultrasound finding, most age group is (31-45) years, with classification none which include gravid uterus.

Table 1 Crosstab of onset duration of pain and degenerating uterine fibroid

		On set duration of pain		Total	
		Acute	Chronic		
The patient ultrasound finding - degenerating uterine fibroid	Yes	Count	1	5	6
		% within The patient ultrasound finding - degenerating uterine fibroid	16.7%	83.3%	100.0%
		% within on set duration of pain	1.6%	13.9%	6.0%
	No	Count	63	31	94
		% within The patient ultrasound finding - degenerating uterine fibroid	67.0%	33.0%	100.0%
		% within on set duration of pain	98.4%	86.1%	94.0%
Total		Count	64	36	100
		% within The patient ultrasound finding - degenerating uterine fibroid	64.0%	36.0%	100.0%
		% within on set duration of pain	100.0%	100.0%	100.0%

Table 2 Strong and significant correlation between chronic onset duration of pain and degenerating uterine fibroid because B value is .02 which is less than .05. (a Computed only for a 2x2 table, b 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.16)

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.207(b)	1	.013		
Continuity Correction(a)	4.214	1	.040		
Likelihood Ratio	6.080	1	.014		
Fisher's Exact Test				.022	.022
Linear-by-Linear Association	6.145	1	.013		
N of Valid Cases	100				

Table 3 Strong correlation between constant character of pain and pelvic inflammatory disease because B value is .03 which is less than .05

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.394(a)	2	.025
Likelihood Ratio	6.494	2	.039
Linear-by-Linear Association	6.925	1	.009
N of Valid Cases	99		

Table 4 Crosstab of Character of pain and pelvic inflammatory disease

		The patient ultrasound finding - pelvic inflammatory		Total	
		Yes	No		
Character of pain	Intermittent	Count	1	68	69
		% within Character of pain	1.4%	98.6%	100.0%
		% within The patient ultrasound finding - pelvic inflammatory	20.0%	72.3%	69.7%
	Crampy	Count	0	3	3
		% within Character of pain	.0%	100.0%	100.0%
		% within The patient ultrasound finding - pelvic inflammatory	.0%	3.2%	3.0%
	Constant	Count	4	23	27
		% within Character of pain	14.8%	85.2%	100.0%
		% within The patient ultrasound finding - pelvic inflammatory	80.0%	24.5%	27.3%
Total		Count	5	94	99
		% within Character of pain	5.1%	94.9%	100.0%
		% within The patient ultrasound finding - pelvic inflammatory	100.0%	100.0%	100.0%



Figure 1 Uterus with thick echogenic debris inside uterine cavity diagnosed as incomplete abortion

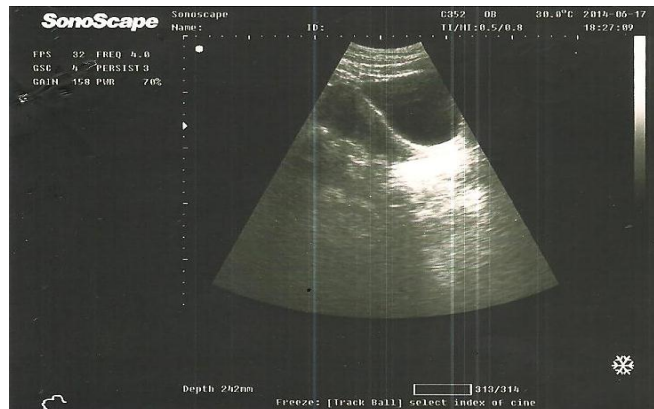


Figure 2 Normal empty uterus and free adnexa diagnosed as normal ultrasound finding of female pelvis

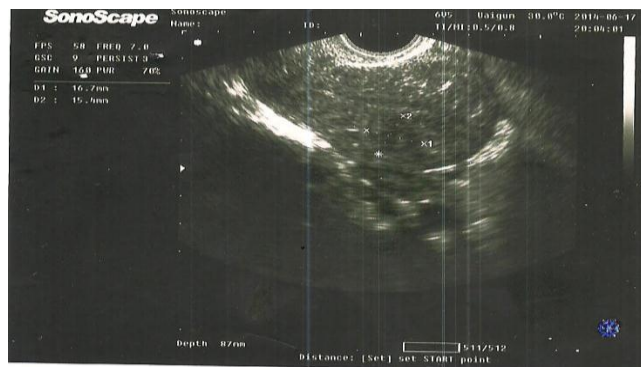


Figure 3 Empty uterus contains in the anterior wall rounded, hypoechoic lesion diagnosed as Intra mural uterine fibroid, its dimensions 16.7mm by 15mm



Figure 4 Normal ultrasound finding of female pelvis with endometrial thickness 11 mm

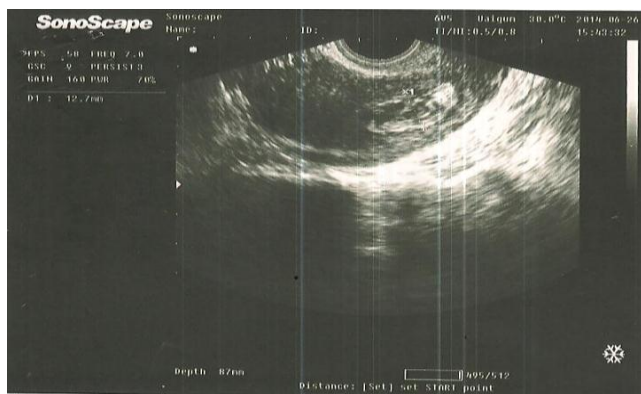


Figure 5 Anteverted uterus with echogenic, heterogenous material inside the uterine cavity and the cervix diagnosed as incomplete abortion



Figure 6 Anechoic rounded structure with fine echogenic material inside diagnosed as hemorrhagic ovarian cyst

The characteristics of pain in missed abortion include pain of mild severity, intermittent character, unilateral location, tender nature, acute onset duration, with no history of similar pain in the past. Pain is accompanying with vaginal bleeding but not accompanying with vaginal discharge. All patients have positive pregnancy test.

With blighted ovum as ultrasound finding, the most age group is (31-45) years, the none category on menstrual phase is most detected (gravid uterus). The characteristic of pain include; mild severity, intermittent character, central location, tender nature, acute onset duration and no past history of similar pain. Pain is accompanying with vaginal bleeding but not accompanying with vaginal discharge. All patients have positive pregnancy test.

Conclusions

Pelvic pain in females comes with different severity, locations, character, nature and different on set duration. The variations in characteristic of pain it's due to different type of diseases. The researcher abstracted the following pain characteristic of different diseases.

Uterine fibroid commonly occur in age group (31-45) years, it has moderate, central location pain, tender nature and chronic onset duration of the pain.

Hemorrhagic ovarian cysts commonly occur in age group (31-45) years. It has severe, constant pain with

unilateral location on the side of cyst, tender nature and acute on set duration and pain is accompanying with vaginal discharge.

PID has moderate, constant, central location pain, tender nature and chronic onset duration. The pain is accompanying with vaginal discharge.

IUP mostly occurs in age group (13-30) years, it has moderate, intermittent pain with central location, tender nature and acute on set duration.

Incomplete abortion mostly occurs in age group (13-30) years, it has severe pain, intermittent character, central location, acute onset duration. Pain is accompanying with vaginal bleeding.

Complete abortion mostly occurs in age group (13-30) years, it has central location pain, tender nature and acute onset duration. The pain is accompanying with vaginal bleeding.

Missed abortion mostly occurs in age group (31-45) years, it has mild, intermittent pain with central location, non-tender nature and acute on set duration. The pain is accompanying with vaginal bleeding.

Blighted ovum mostly occurs on age group (31-45) years, it has mild, intermittent pain with central location, tender nature and acute on set duration. The pain is accompanying with vaginal bleeding and discharge.

Not all patients with pelvic pain have positive ultrasound finding. 19% of patients have pelvic pain with

different severity and different characteristic but have normal ultrasound finding.

Recommendations

Using good ultrasound equipment with Doppler capability to obtain accurate diagnosis and results and availability of transvaginal ultrasound in all gynecological and obstetrical departments to decrease chance of missed diagnosis which may occur with using of transabdominal ultrasound only.

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