Abnormalities sonogram of femalepelvis, in Jeddah

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Abstract: *In our research, sonogram of female pelvis is frequently used ultrasound (U/S) to evaluate the reproductive and urinary systems. It is preferred to assess the: cervix, ovaries, genital duct including: uterus and fallopian tubes with a fibro muscular tube called vagina, bladder and characterize changes in the urinary system and troubles of the reproductive system of women. The fallopian (uterine) tubes is two tortuous tube one on each side of uterus running in upper border of ligament, uterine tubes distinguished into four parts: infundibulum, ampulla, isthmus, intramural. Uterus is formed of four parts: fundus, body, isthmus, cervix. when pelvic us procedure begin: The wave transmits through the body and are reflected back variably depending on the different type of tissue including abnormalities in uterus. Benign ovarian cysts are common. Uterine fibroids (leiomyoma): fibroids are common in pregnancy and black women.*
Objective: *This study aims to determine the most common female pelvic diseases in Jeddah city for the last four years starting (1 January 2014 and 30 December 2017).*
Methods: *This research is A retrospective study carried out in Jeddah at two hospitals by many organized steps in a given time period. Two thousand female pelvic (U/S) reports from King Abdulaziz University Hospital (KAUH) and one thousand female pelvic (U/S) reports from Maternity and Children's Hospital (MCH) during the period (1 January 2014 and 30 December 2017) were reviewed, to find sonographic findings of the female pelvic using the patient's information recording system. Then just out of 3000 reports, a total of 335 (10.67%) maternal data was collected.*
Results: *Based on the final search results the most common abnormality sonograms of the female pelvis in this study was fibroid with (36.12%). In this study the results were appear there was no relation between the fibroid and the age. According to this study ovarian cysts were common in married women over age of 40 year.*
Conclusion: *Fibroid of the uterus were the most widely abnormality sonograms of the female pelvis and also common neoplasms and most were the conventional type and therefore easy to diagnose by US with 36.12% as larger percentage Most uterine fibroid appear as well-defined solid masses.*
Key words: *Uterus, female pelvic, Reproductive system, fibroid, sonograms.*

I.   Introduction

The term a sonogram refers to the image generated during ultrasonography⟨1⟩.Access ultrasound (U/S) to discover any abnormalities in female's pelvis, the study will be concerned with measurement of the efficiency and sensitivity of (U/S) contrivance to detect pelvis diseases⟨1⟩. (U/S) imaging of the pelvis uses sound waves to produce image of the structures and organs in the lower abdomen and pelvis⟨1⟩. US imaging, also called US scanning or sonography. It is the best used for several reasons are noninvasive like no needles or injections, lower cost than other imaging modalities, its safe use of non-ionizing radiation, painless, also produce an evident image of soft tissues that do not appear clearly on x-ray image⟨2⟩. U/S device for pelvic scanning is a diagnostic medical examination is accompanied by two types of exams are abdominal (transabdominal), vaginal (transvaginal/endovaginal)⟨3⟩. These exams are frequently used to evaluate the reproductive and urinary systems U/S Image preferred to diagnose and monitor the female pelvis, it is preferred to evaluate the: uterus, cervix, ovaries, fallopian tubes, bladder and identify changes in the urinary system and disorders of the reproductive system of women like pelvic pain, abnormal vaginal bleeding, other menstrual problems, palpable masses such as ovarian cysts and uterine fibroids ovarian or uterine cancers without exposure to radiation⟨4⟩. Transabdominal probe to evaluate the uterus, adnexa, and other pelvic structures through acoustic window by making the bladder full⟨5⟩. Or endovaginal transducer that is inserted through the vagina with an empty bladder to evaluate myometrial defects endometrial thickening, masses, polyps, also the stroma, follicles⟨6⟩. It can assess the uterus and the ovaries clearly through transvaginal better than transabdominal, which help us to

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diagnose more accurately and healthily⟨6⟩. Sonohysterography allows for a more in-depth investigation of the uterine cavity⟨6⟩. Three-dimensional (3-D) ultrasound permits evaluation of the uterus and ovaries in planes that cannot be imaged directly⟨6⟩. These exams are typically performed to detect: uterine anomalies, uterine, scars, endometrial polyps, fibroids, cancer especially in patients with abnormal uterine bleeding Gray scale and color Doppler US are often the initial imaging acquired, these images play an important role in selecting appropriate diagnosis and in direction medical and surgical treatment⟨6&7⟩. Doppler ultrasound, also called color Doppler ultrasonography, is a special ultrasound technique that allows the physician to see and evaluate blood flow through arteries and veins in the abdomen and pelvis⟨7⟩. Finally, obtain statistical measurement to determine the most common female's pelvic diseases in some Jeddah hospitals for the last four years from 1 January 2014 - 30 December 2017. The pelvic diseases are the most common ailments in women that can be caused by gynecologic pathology and non-gynecology and are usually diagnosed by the US system, US do not have ionizing radiation and allows direct and efficient connection of region of the pain with imaging results this is the reason for using US device⟨1⟩.

The goal of this study is to detect the most common pelvic diseases spread among women in Jeddah city and the ease of detection by the US device with high sensitivity and accurate efficiency without any need for other modalities⟨3⟩.

II.   Literature Review

2.1. Background:
US use a sound wave to create 3D images of female's reproductive organs, which made up of primary sex organ ovary and genital duct including: uterus and fallopian tubes with a fibro-muscular tube called vagina.

The ovary is located in ovarian fossa on each side of pelvic wall with almond-shaped for each one, it is responsible for produce ova with secretion endocrine hormones Estrogen and Progesterone. Uterus is inverted pear-shaped hollow thick muscular organ, which is located in central part of pelvis between posterior of rectum and anterior of urinary bladder, it is formed of four parts: fundus is dome-shaped part above level of the opening of fallopian tube, body is the major part between the funds and the isthmus. And, isthmus is slight constriction between the body and the cervix. Last, cervix is a narrow portion bulging into upper part of vagina, hence it has supravaginal and vaginal part ⟨8⟩.

Another tube of genital duct is fallopian (uterine) tubes, it is two tortuous tube one on each side of uterus running in upper border of ligament with 10 cm long, uterine tubes differentiated into four parts: infundibulum is a funnel-shaped region which contains the abdominal opening of the tube, ampulla is the longest and widest part which fertilization of oocyte by a sperm usually occurs here. And, isthmus is the short and narrowest part which runs nearly straight. Last part of uterine tube is intramural which embedded in the uterine wall. Vagina is fibro-muscular tube between the cervix and vestibule (the cleft between labia minora) being directed up and background forming a right angle with the uterus, it is the copulatory organ in female and it serves as a passage for menstrual flow and child birth ⟨9⟩.

Blood supply of female pelvis, ovaries are supplied by ovarian arteries which are branches from the abdominal aorta. Right ovarian vein drains into inferior vena cava and left one drains into left renal vein, oviducts are supplied by ovarian and uterine arteries.The uterus is supplied mainly by the two uterine arteries and partly by the ovarian arteries. The uterine arteries are branches from the iliac arteries, veins drain into internal iliac veins ⟨10⟩.

2.2. Rationale:
There is a many disorder in female pelvis can visualize by US which employs a high-frequency sound wave. The wave travel through the body and are reflected back variably depending on the different type of tissue including abnormalities in uterus such as leiomyomas and congenital uterine anomalies, endometrium changes and abnormal thickening or configuration, fallopian tube. Also, ovaries appear perfect in US and can defines disorder of it.

Uterine fibroids (leiomyoma): fibroids are common in pregnancy and occur more often among black women, tumors resulting from benign overgrowth of smooth muscle and connective tissue and occur in up 50% of women over age of 30. Fibroids generally shrink after menopause⟨11⟩. The following radiological feature may be notes on ultrasound; calcification, enlarged uterus with a distorted outline, lobular or round masses of variable echogenicity being myometrial, pedunculated, subendometrial. The degree to which race/ethnic disparities in prevalence of leiomyomas may add to disparities in events like miscarriage and preterm birth warrants investigation.

Fallopian tube occlusion case of occluded fallopian tubes includes previous infection, peritonitis (especially from appendicitis) or tubal surgery, generally not adequately seen in US unless there is a hydrosalpinx⟨12⟩.

Polycystic ovaries syndrome are associated with chronic anovulation due to disturbance of luteinizing hormone (LH) and follicle stimulating hormone (FSH). The classical clinical features that suggest PCOS are obesity, hirsutism, infertility and oligomenorrhea (Stein-Leventhal syndrome). Still, many women have biochemical abnormalities without these features and present with menstrual irregularity. US may show marked ovarian enlargement, although the ovarian may be of a normal size ⟨13⟩.

Benign ovarian cysts are common and they can reach sizes that can occupy most of the abdominal cavity, on US the typical appearance indicating a benign lesion are; thin walls, free of internal echoes with lack of internal septations. Simple cysts <6cm should have follow-up US, a large cyst may show on a plain abdominal and pelvis films as a soft tissue mass arising out of the pelvis. But, complex cysts may hemorrhagic or endometrioma. Otherwise, CT and MRI are both accurate imaging modalities, when US is unclear or when malignancy is suspected ⟨14⟩.

Ovarian carcinoma is the commonest cause of death from female genital tract cancer, it is a disease with a poor prognosis occur when patient have abnormal vaginal bleeding, pelvic abdominal mass or distension, weight loss and anorexia. US is the most applicable investigation and diagnosis can frequently be made by technique ⟨15⟩. On the other hand, CT and MRI are essential in staging the tumor prior to resection. Malignancy may be suspected in a pelvic mass if the following features are present; thick irregular septations with nodules, thick wall with irregular of inner wall, mixed solid and cystic components and ascites. Although this may also be seen in benign lesion.

All of the above specifically focused on morphological and certain disease in women pelvis and how it looks like. However, our present study aims and significance to investigate "Abnormalities sonograms of female's pelvis in some Jeddah hospitals".

III.   Material and Methods

This research is a retrospective study carried out in Jeddah at (KAUH) and (MCH) between 1 January 2014 and 30 December 2017. First, an ethical approval was obtained from the hospitals and the college of applied medical sciences. Second, the data were collectedreports of female pelvic US cases performed during pre-specified period. Collection of data started on November 2017 and ended on January 2018.

Two thousand female pelvic US reports from KAUH and one thousand female pelvic US reports from MCH during the period from January 2015 and December 2017 were reviewed, to find sonographic findings of the female pelvic using the patient's information recording system. Out of 3000 reports, a total of 335 (10.67%) maternaldata was collected,because only those subjects have fulfilled the criteria of our needed outcome measures recorded for our study. Then, we classified the data according to the World Health Organization (WHO) classified and organized it in an excel sheet.After that, data wereanalyzed by SPSS to measure the relationship between increasing the disease with increasing the age and between diagnosis with social state.

IV.   Results

Among the total of three thousand female pelvic cases during the period of study (2014 – 2017) there were three hundred and thirty five cases (10.67%) that had abnormalities

Diagnostic	Count	%
Fibroid	121	36.12%
Ovarian cyst	81	24.18%
PCO	59	17.61%
Bulky uterus	24	7.16%
Thick endometrium	13	3.88%
Ovarian mass	7	2.09%
Adnexal mass	5	1.49%
Dermoid cyst	4	1.19%
Endometrian	3	0.90%
Vaginal Agenesis	2	0.60%
Uterine polyp	2	0.60%
Endocervical polyp	2	0.60%
Cervical polyps	2	0.60%
Cervical cancer	2	0.60%
Adnexal cysts	2	0.60%
Tumor	1	0.30%
Solitary cyst	1	0.30%
Ovarian torsion	1	0.30%
Ovarian adenocarcinoma	1	0.30%
Endometrial polyps	1	0.30%
Cervical cyst	1	0.30%
Total	**335**	**100. %**

Table 1. The most common abnormalities sonograms of female'spelvis

According to table (A) the most common abnormalities in female's pelvic investigated by US were fibroid with (36.12%) then the ovarian cyst (24.18%). After that, Poly cystic ovary (PCO) with (17.61%).

Table 2.The relationship between increasing abnormalities with increasing age.

Abnormalities	Age										Total		P value
	< 20		20-30 year		31-40 year		41-50 year		>50				
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	
Adnexal Cysts	0	0.00%	1	0.30%	0	0.00%	1	0.30%	0	0.00%	2	0.60%	
Adnexal Mass	0	0.00%	1	0.30%	3	0.90%	0	0.00%	1	0.30%	5	1.49%	
Bulky uterus	0	0.00%	2	0.60%	10	2.99%	8	2.39%	4	1.19%	24	7.16%	
Cervical cancer	0	0.00%	0	0.00%	0	0.00%	1	0.30%	1	0.30%	2	0.60%	
Cervical cyst	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.30%	1	0.30%	
Cervical polyps	0	0.00%	0	0.00%	1	0.30%	1	0.30%	0	0.00%	2	0.60%	
Dermoid cyst	0	0.00%	1	0.30%	1	0.30%	2	0.60%	0	0.00%	4	1.19%	
Endocervical polyp	0	0.00%	0	0.00%	0	0.00%	1	0.30%	1	0.30%	2	0.60%	
Endometrial polyps	0	0.00%	0	0.00%	0	0.00%	1	0.30%	0	0.00%	1	0.30%	
Endometriam	0	0.00%	1	0.30%	1	0.30%	1	0.30%	0	0.00%	3	0.90%	
Fibroid	0	0.00%	9	2.69%	30	8.96%	58	17.31%	24	7.16%	121	36.12%	0.001
Ovarian adenocarcinoma	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.30%	1	0.30%	
Ovarian cyst	3	0.90%	15	4.48%	25	7.46%	28	8.36%	10	2.99%	81	24.18%	
Ovarian mass	0	0.00%	0	0.00%	4	1.19%	2	0.60%	1	0.30%	7	2.09%	
Ovarian torsion	0	0.00%	0	0.00%	1	0.30%	0	0.00%	0	0.00%	1	0.30%	
PCO	6	1.79%	26	7.76%	19	5.67%	8	2.39%	0	0.00%	59	17.61%	
Solitary cyst	1	0.30%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.30%	
Thick Endometrium	0	0.00%	0	0.00%	2	0.60%	5	1.49%	6	1.79%	13	3.88%	
Tumor	0	0.00%	0	0.00%	1	0.30%	0	0.00%	0	0.00%	1	0.30%	
Uterine polyp	0	0.00%	0	0.00%	1	0.30%	1	0.30%	0	0.00%	2	0.60%	
Vaginal Agenesis	0	0.00%	0	0.00%	2	0.60%	0	0.00%	0	0.00%	2	0.60%	
Total	**10**	**2.99%**	**56**	**16.72%**	**101**	**30.15%**	**118**	**35.22%**	**50**	**14.93%**	**335**	**100. %**	

There is a significant correlation between increasing diseases with increasing age (p<0.01) According to table (B). There is an increase of abnormalities with increasing age until 50. But, above 50 ages, there is a drop of abnormalities.

Table 3. The relationship between the social state and Abnormalities.

Abnormalities	Social state				Total		P Value
	M		S				
	Count	%	Count	%	Count	%	
Adnexal Cysts	2	0.60%	0	0.00%	2	0.60%	
Adnexal Mass	5	1.49%	0	0.00%	5	1.49%	
Bulky uterus	24	7.16%	0	0.00%	24	7.16%	
Cervical cancer	2	0.60%	0	0.00%	2	0.60%	
Cervical cyst	1	0.30%	0	0.00%	1	0.30%	
Cervical polyps	2	0.60%	0	0.00%	2	0.60%	
Dermoid cyst	3	0.90%	1	0.30%	4	1.19%	
Endocervical polyp	2	0.60%	0	0.00%	2	0.60%	
Endometrial polyps	1	0.30%	0	0.00%	1	0.30%	0.06
Endometriam	1	0.30%	2	0.60%	3	0.90%	
Fibroid	103	30.75%	18	5.37%	121	36.12%	
Ovarian adenocarcinoma	1	0.30%	0	0.00%	1	0.30%	
Ovarian cyst	69	20.60%	12	3.58%	81	24.18%	
Ovarian mass	7	2.09%	0	0.00%	7	2.09%	
Ovarian torsion	1	0.30%	0	0.00%	1	0.30%	
PCO	44	13.13%	15	4.48%	59	17.61%	
Solitary cyst	0	0.00%	1	0.30%	1	0.30%	
Thick Endometrium	13	3.88%	0	0.00%	13	3.88%	
Tumor	1	0.30%	0	0.00%	1	0.30%	
Uterine polyp	1	0.30%	1	0.30%	2	0.60%	
Vaginal Agenesis	2	0.60%	0	0.00%	2	0.60%	
Total	**285**	**85.07%**	**50**	**14.93%**	**335**	**100.00%**	

There is no significant correlation between social state and the diagnosis (p>0.05).According to table (C). There is a huge difference between married women (85.07%) and single women (14.93%).
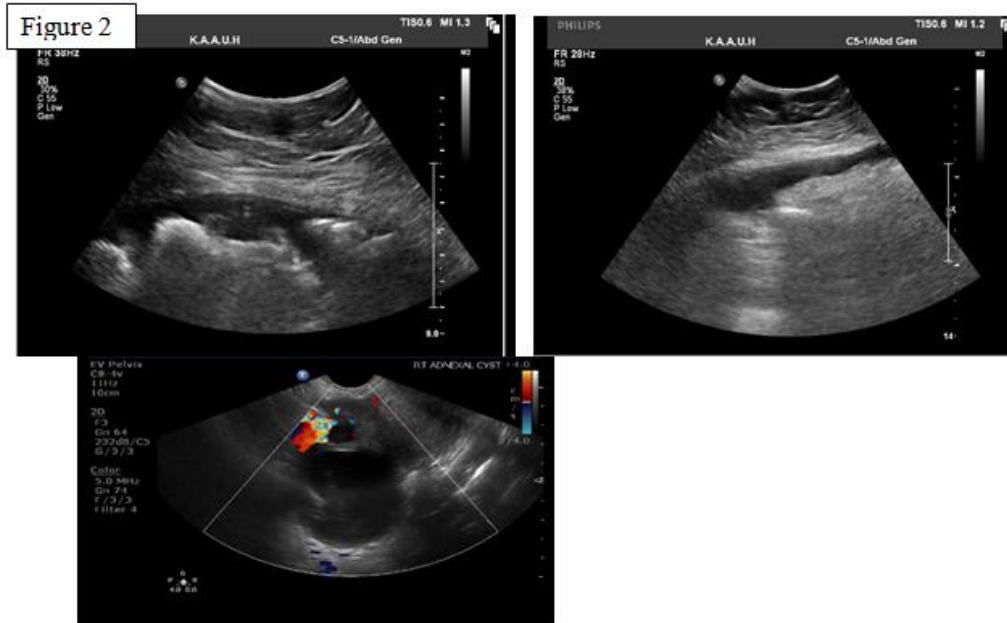<2015, KAUH>
In figure (1)follow up for female patient with uterine fibroid.
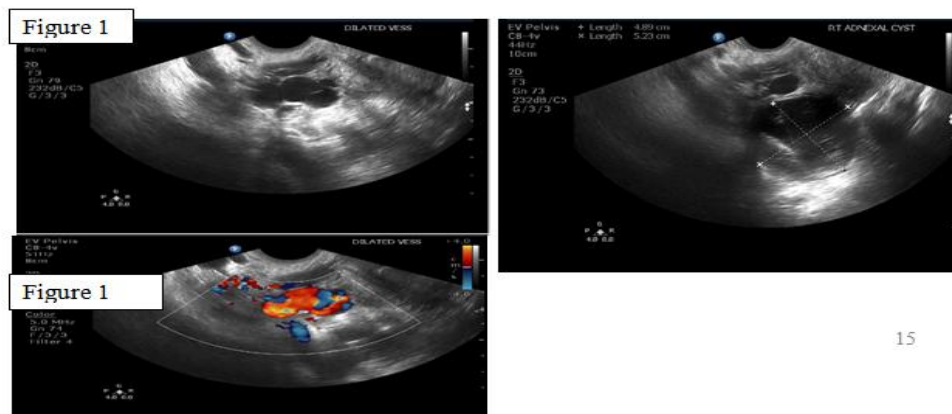
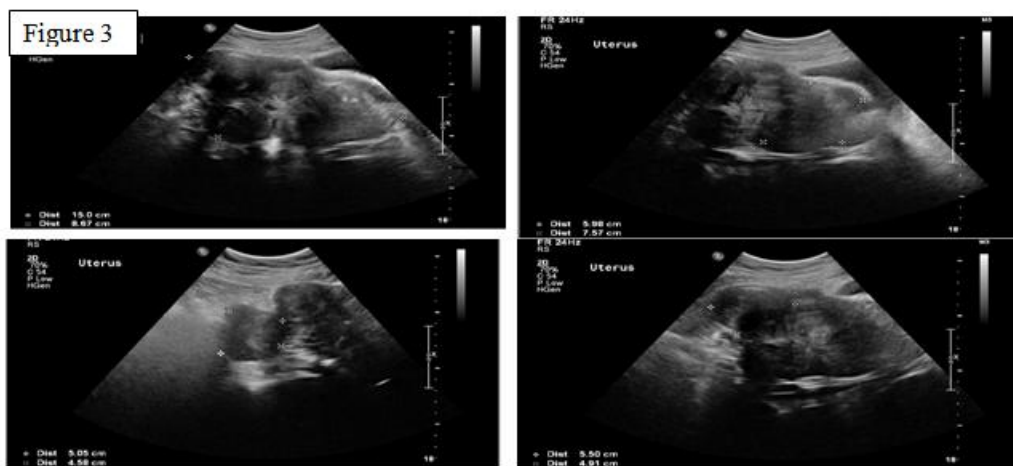

<2015, KAUH>

In figure (2) recurrent cervix cancer (cx ca) 58 years old with ascitic malignancy for US guided aspiration for cytology.
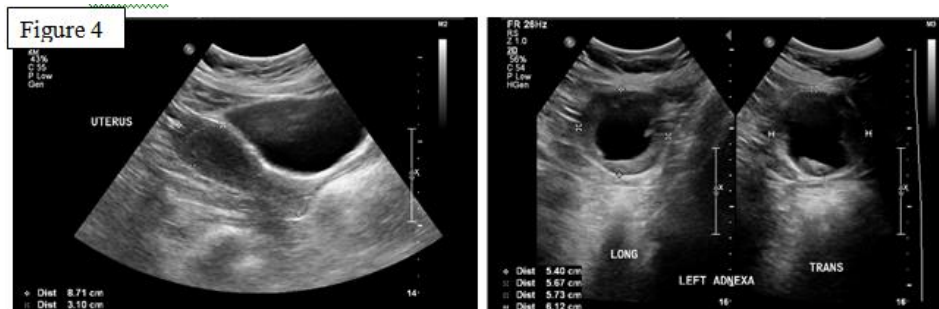

<2015, KAUH>

In figure (3) female with minimal ovarian vascularity to rule out ovarian torsion.

<2015, KAUH>

In figure (4) case of 52 female years old with abdomen pain for long time, previous US showed left adnexal mass.

<2015, KAUH>

V.   Discussion

The most common abnormality sonograms of the female pelvis in this studywasfibroid with (36.12%). The fibroids are the most common cause of enlargement of the uterus (bulky uterus)⟨16⟩.And as in "Variation in the Incidence of Uterine Leiomyoma Among Premenopausal Women by Age and Race" article they use 95,061 premenopausal nurses age 25–44 with intact uteri and no history of uterine leiomyoma were followed to determine incidence rates of uterine leiomyoma⟨17⟩. Then they found out this During 327,065 woman-years, 4181 new cases of uterine leiomyoma were reported. The incidence rates increased with age⟨17⟩. On the other hand, in this study the results are different. Which is appear there is no relation between the fibroid and the age.

The most common ovarian pathology is the ovarian cyst⟨16⟩. According to this study ovarian cysts are common in married women over age of 40 years. It may be observed sonographically even in post-menopausal women ⟨18⟩. The finding in US are follicular cysts with a thin wall and sonolucent appearance. However, Ovarian cysts do not contain malignancy ⟨19⟩, but if not monitored or kept under observation, ovarian cysts can develop into ovarian cancers ⟨20 − 21⟩.

The PCOS was first described be Stein and Leventhal⟨22⟩. The most common sonographic finding of PCO is enlarged ovaries with multiple small follicles.The classical clinical features that suggest PCOS are abnormal hair growth, over wait, irregular period and acne.

VI.   Conclusion

In summary, our results found that the most widely abnormality sonograms of the female pelvis were fibroid. We found that fibroid of the uterus were common neoplasms and most are the conventional type and therefore easy to diagnose by US with 36.12% as larger percentage Most uterine fibroid appear as well-defined solid masses. Their echogenicity is comparable of the myometrium or occasionally hypoechoic, also show a portion posterior acoustic shadowing. Finally, U/S is the first medical imaging tools using to detect abnormalities of female's pelvis, because it is affordable, speedy, safe and available everywhere.

Recommendations:

We recommended that an appropriate selection of further imaging modalities such as MRI is also very significant for the accurate diagnosis.

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