بسم الله الرحمن الرحيم

SUDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLAGE OF GRADUATE STUDIES

Study of post menopausal vaginal bleeding in Sudanese women by using Ultrasonography

دراسة النزيف المهبلي لدى النساء السودانيات بعد انقطاع الدورة الشهرية بإستخدام الموجات فوق الصوتية

A thesis Submitted for Partial Fulfillment for the Requirements of M.Sc Degree in Medical Diagnostic Ultrasound

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الآية

أعوذ بالله من الشيطان الرجيم

بسم الله الرحمن الرحيم

قَالَ تَعَالَىٰ:

﴿ وَلَا تَعْمَلُونَ مِنْ عَمَلٍ إِلَّا كُنَّا عَلَيْكُمْ شُهُودًا إِذْ تُفِيضُونَ فِيهِ ۚ ﴾

صدق الله العظيم

سورة يونس (الايه: 61)

Dedication

To:

My parents

My family

My wife

My colleges

& and all my teachers

Acknowledgement

First my acknowledgement and great fullness at the beginning and end to ALLAH

Then, my special gratitude to my supervisor Dr Babeker abd elwahab, who do his best helping and guidance. I am very grateful to all my teachers in all educational levels.

Finally specially thanks for Dr Ahmed EL Mustafa, Dr El taieb Al ebaied consultant of radiology for his good helping and guidance, and Dr Hamza ahmed who did the computer work and data analysis .

List of Abbreviations

Abb	Word
D&c	Diletation and curetage
EH	Endometrial hyper plasia
ET	Endometrial theckness
EFG	External female genitalia
HRT	Hormonal replacement therapy
I FG	Internal female genitalia
IUD	Intra uterine device
IUGR	Intra uterine grouthe retardation
PCO	Poly cystic ovaries
PID	Pelvic inflamatory disease
PMVB	Post menopausal vaginal bleeding
PV	Per vagina
SP	Sacral plexuse
SN	Sacral nerves
US	Ultra sound
RPOC	Retained products of conception

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ABSTRACT

This is a scientific and practical study which was done during September -2015 to march 2016 and was carried out in Sudan-Khartoum state(Khartoum, Omdurman teaching hospitals).

The study discusses the evaluation of U/S Scanning in diagnosing of post menopausal vaginal bleeding .

A total of “50” patients were selected randomly; all those patients have age above forty years, have signs of post menopausal vaginal bleeding and referred by physician.

All patients were subjected to be examined by U/S scanning using ‘Honda’ Aloka and General Electric scanners with 3,5MHz probe .

Trans abdominal scanning were performed for all patients and measured AP , length and transverse diameters of the uterus , endometrial thickness , then evaluates the shape and texture of the uterus , and diameters and shape of mass if present.

This study found that there were 15 patients (30%) have endometrial hyper Plasia , 17 patients (34%) have uterine fibroid , 9 patients (18%) Endometrial Carcinoma, 5 patients (10%) have uterine carcinoma and 4 patients (8%) have cervical carcinoma . also it found that the age is risk factor for post menopausal vaginal bleeding.

In addition to that the study shows that; the U/S findings of the uterine cancers mostly changes the texture of the uterus , all patients with uterine cancer 5 patients they have change in uterine texture , 8 patients out of 9 with endometrial carcinoma they have change in uterine texture while 1 patient have no change , 3 patient out of 4 with

cervical carcinoma they have change in uterine texture while 1 patients have no change, all patients with uterine fibroid 17 patients they have no change in uterine texture, 14 patients out of 15 from those have endometrial hype Plasia have no change in uterine texture while 1 of them do have, this indicate that most patients with malignant disease they have change in the texture of the uterus while the majority of patients with benign disease they have normal uterine texture. In this study we found that the possibility of change in uterine texture and increased endometrial thickness increased with increase age of menopause, also we found that the possibility of post menopausal vaginal bleeding increased with fertility, lactation and increased number of abortions, also we found that this disease is more common in low and moderate socio economic statues more than high socio economic statues.

This study recommended that elder women (40 years or greater) should be educated about post menopausal vaginal bleeding for early complain to health centers for early diagnoses and treatment , also recommended that the government should introduce new ultrasound machines and increase the training institutes of ultrasound for increasing the sonologists skills and experiences , also recommended that the government should be increase the specialist hospitals for gynecology diseases because they increased in Sudanese women now a days.

ملخص الدراسة

هذه الدراسة علمية وعملية وأجريت خلال سبتمبر 2015م إلي مارس 2016م طبقت بجمهورية السودان ولاية الخرطوم (مستشفيات الخرطوم و أم درمان التعليمية). ناقشت الدراسة تقييم المسح بالموجات فوق الصوتية في تشخيص النزيف الذي يظهر عند النساء بعد انقطاع الدورة الشهرية في سن اليأس

هنالك (50) مريضه تم اختيارهن عشوائيا و جميعهن لديهن أعمار اكبر من 40 سنة، لديهم علامات نزيف ما بعد انقطاع الدورة بواسطة الطبيب .

كل المريضات فحصن بالموجات فوق الصوتية باستخدام ماسحات هوندا، الوكا وجنرال اليكتريك بطاقة مقدارها 3.5 ميقا هرتز.

اجري المسح عن طريق البطن لكل المرضى وتم قياس البعد الأمامي الخلفي ، الطول و العرض للرحم ، وسمك البطانة الداخلية للرحم، تقييم شكل ومظهر الرحم ثم قياس أي جسم غريب في الرحم وقياس الطول و العرض لهذا الجسم الغريب مع تقييم شكل ومظهر هذا الجسم الغريب.

هذه الدراسة وجدت أن هنالك 15 مريضه (30%) من المرضى لديهن تضخم حميد في بطانة الرحم، 17 مريضه (34%) لديهم لحميه(تضخم حميد) في الرحم و9 مريضات (18%) لديهم ورم سرطاني في بطانة الرحم و 5 مريضات(10%) لديهن ورم سرطاني في الرحم و 4 مريضات(8%) لديهن ورم سرطاني في عنق الرحم،

وأيضا وجدت إن العمر عامل خطورة لحدوث النزيف ما بعد انقطاع الدورة الشهرية.

بالإضافة إلى ذلك الدراسة عرضت إن ملامح الموجات فوق الصوتية لسرطان الرحم هي تغيير في شكل الرحم على النحو التالي جميع المريضات بسرطان الرحم لديهن تغير في شكل الرحم 5 مريضات، و 8 من المريضات بسرطان بطانة الرحم كان لديهن تغيرات بينما واحده لم توجد تغيرات ، أما المريضات المصابات بسرطان عنق الرحم ف 3 منهن وجدت تغيرات بينما واحده لم توجد تغيرات،والمريضات اللاتي لديهن لحميه بالرحم 17 مريضه جميعهن لم يوجد تغير في شكل الرحم و المريضات اللاتي لديهن تضخم حميد في بطانة الرحم 14 منهن لم توجد تغيرات بينما واحده فقط وجد لديها تغيرات في شكل الرحم،

مما يعني أن غالبيه المريضات اللاتي لديهن أمراض سرطانية كان لديهن تغيرات في شكل الرحم بينما المريضات بأمراض حميدة الغالبية لم يكن لديهن تغيرات في شكل الرحم .

في هذه الدراسة وجد انه كلما زاد عمر انقطاع الدورة الشهرية لدى النساء كلما زادت احتماليه تغير شكل الرحم و كلما زادت سماكه بطانة الرحم الداخلية، ووجد انه كلما زادت خصوبة المريضة و كانت مرضعة كلما زادت فرصه حدوث المرض ، و وجد انه كلما زاد عدد الاجهاضات لدى المرأة كلما زادت احتماليه حدوث المرض، كما وجد أن حدوث هذا المرض في النساء من الطبقة المتدنية و الوسطى أكثر من النساء اللاتي من الطبقة العليا .

هذه الدراسة أوصت بضرورة التثقيف الصحي للنساء فوق سن 40 بأسباب حدوث النزيف المهبلي بعد انقطاع الدورة وسرعة الذهاب لأقرب مستشفى لسرعة التشخيص و العلاج، كما تمت التوصية بتحسين الخدمات في أقسام أمراض النساء بالمستشفيات و تحديث الأجهزة و تدريب الكوادر للمساعدة في دقه التشخيص لهذا المرض كما أوصت بزيادة عدد أخصائيين أمراض النساء في المستشفيات التعليمية و ذلك لزيادة عدد حالات أمراض النساء وخاصة حالات النزيف ما بعد انقطاع الدورة الشهرية في هذه الفترة.

CHAPTER ONE

1-1 Introduction:

Menopause is that point in time when there is cessation of menses because of loss of ovarian activity , post menopausal bleeding is bleeding from the vagina after a women has stopped having menstrual cycle due to menopause, the causes of pos menopausal bleeding include uterine polyps, which are non cancerous growths in the lining of the endometrium, another possible cause is endometrial hyperplasia which is the thickening of the endometrium, bleeding may also develop due to uterine fibroid , uterine cancer and cervical cancer, the symptoms of post menopausal bleeding depend on the cause of the bleeding, the first step in diagnosing the cause in an examination and the medical history, also the doctor may conduct a pap smear as part of a pelvic examination , trance pelvic and trance vaginal ultrasound also play a major role in the diagnoses of the cause, another diagnostic procedure is a hysteroscopy witch show endometrial tissue, treatment depends on the cause of the bleeding, on whether is heavy or if additional symptoms are present, and station where cancer has been ruled out, treatment may include the following ,

estrogen creams, Polyp removal ,progestin (it is hormone replacement), and hysterectomy, if the bleeding is due to cancer treatment will depend on the type of cancer and how advanced it is common treatment for endometrial or cervical cancer includes, surgery, chemotherapy and radiation therapy, the out lock for post menopausal bleeding is successfully treated in many cases, if the bleeding is due to cancer the prognosis depend on the type of the cancer and stage at which it was diagnosed. Alfred Abohamed 2007.

1.2 Statements of the problem:-

Post menopausal vaginal bleeding disease becomes a significant challenge public health which may be due to benign or malignant pathology ,this study aim to determine the most commone cuse and the role of ultrasound in demonstrating of vaginal bleeding causes. .

1-3 Hypothesis of the study: Ultrasond scanning is a good diagnostic tool for diagnosis of post menopausal vaginal bleeding.

1-4 Objective of the study :

1-4-1 General objective:

to study the post menopausal vaginal bleeding in Sudanese women using ultrasonography.

1-4-2 Specific objective:

1-To identify the causes of post menopausal vaginal bleeding.

2-To identify the ultrasound findings of each cause.

3-To evaluate the role of ultrasound in demonstrating of vaginal bleeding causes.

1-5 Overview of the study:

This study consist of five chapters, chapter one contains introduction, hypothesis, objectives and overview of the study. chapter two deals with literature review which includes anatomy of the female pelvic organs and genitalia ,causes of post menopausal vaginal bleeding and sonographic features and briefly mention of adenexia pathology. chapter three contains methodology of the study, chapter four contains results of the study, chapter five contains discussion of the results, conclusion and recommendations, finally there are list of references and appendices which include ultrasound images , data collection sheet and data analysis form.

CHAPTER TWO

Literature Review

2-1 Gross Anatomy

2-1-1 External genitalia

The vulva, also known as the pudendum, is a term used to describe those external organs that may be visible in the perineal area (see the images below). the vulva consists of the following organs: mons pubis, labia minora and majora, hymen, clitoris, vestibule, urethra, Skene glands, greater vestibular (Bartholin) glands, and vestibular bulbs. the boundaries include the mons pubis anteriorly, the rectum posteriorly, and the genitocrural folds (thigh folds) laterally.

Snell 2014.

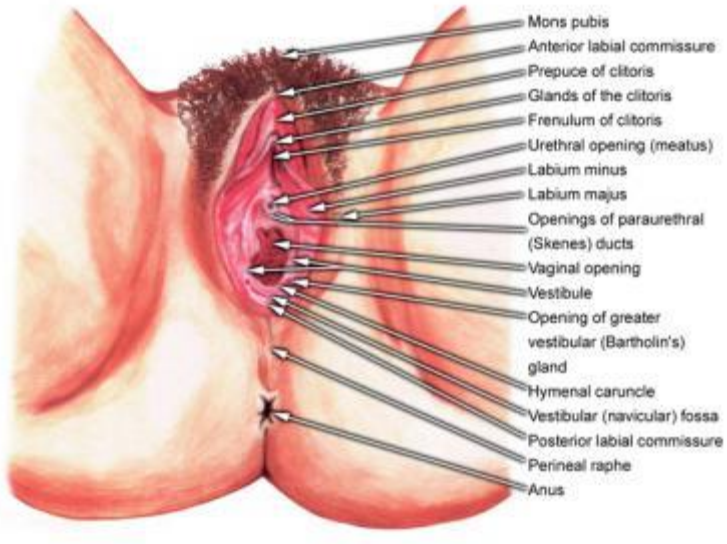

Figure (2-1) shows external female genitalia. Snell 2014.

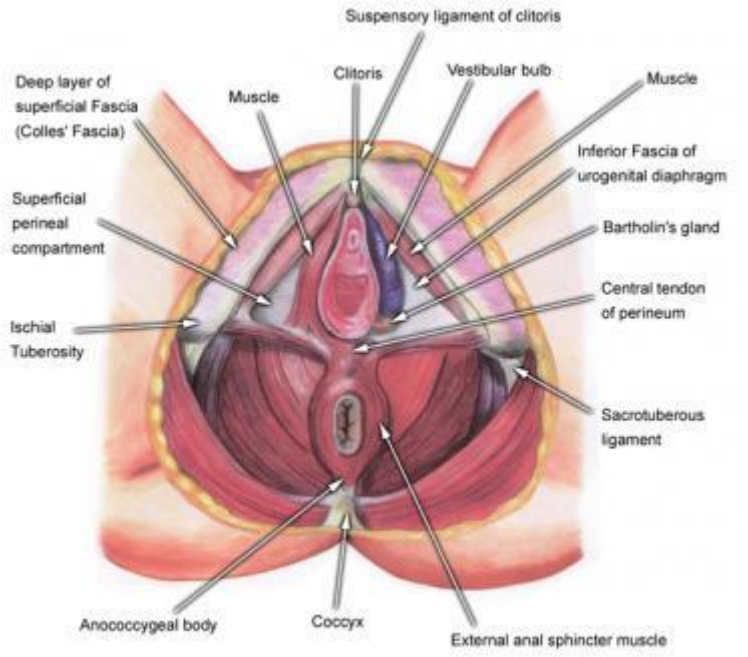

Figure (2-2) shows deeper view of external structures. Snell 2014.

2-1-1-2 Mons pubis

The mons pubis is the rounded portion of the vulva where sexual hair development occurs at the time of puberty. this area may be described as directly anterosuperior to the pubic symphysis. Snell 2014.

2-1-1-3 Labia

The labia majora are 2 large, longitudinal folds of adipose and fibrous tissue. They vary in size and distribution from female to female, and the size is dependent upon adipose content. they extend from the mons anteriorly to the perineal body posteriorly. the labia majora have hair follicles

The labia minora, also known as nymphae, are 2 small cutaneous folds that are found between the labia majora and the introitus or vaginal vestibule. Anteriorly, the labia minora join to form the frenulum of the clitoris. Snell 2014.

2-1-1-4 Hymen

The hymen is a thin membrane found at the entrance to the vaginal orifice. often, this membrane is perforated before the onset of menstruation, allowing flow of menses. the hymen varies greatly in shape. . Snell 2014.

2-1-1-5 Clitoris

The clitoris is an erectile structure found beneath the anterior joining of the labia minora. Its width in an adult female is approximately 1 cm, with an average length of 1.5–2.0 cm. the clitoris is made up of 2 crura, which attach to the periosteum of the ischiopubic rami. It is a very sensitive structure, analogous to the male penis. it is innervated by the dorsal nerve of the clitoris, a terminal branch of the pudendal nerve. Snell 2014.

2-1-1-6 Vestibule and urethra

Between the clitoris and the vaginal introitus (opening) is a triangular area known as the vestibule, which extends to the posterior fourchette. the vestibule is where the urethral (urinary) meatus is found, approximately 1 cm anterior to the vaginal orifice, and it also gives rise to the opening of the Skene glands bilaterally. the urethra is composed of membranous connective tissue and links the urinary bladder to the vestibule externally. a female urethra ranges in length from 3.5 to 5.0 cm. Snell 2014

2-1-1-7 Skene and Bartholin glands

The Skene glands secrete lubrication at the opening of the urethra. The greater vestibular (Bartholin) glands are also responsible for secreting lubrication to the vagina, with openings just outside the hymen, bilaterally, at the posterior aspect of the vagina. each gland is small, similar in shape to a kidney bean. . Snell 2014.

2-1-1-8 Vestibular bulbs

Finally, the vestibular bulbs are 2 masses of erectile tissue that lie deep to the bulbocavernosus muscles bilaterally. Snell 2014.

2-1-2 Internal genitalia

2-1-2-1 Vagina

The vagina extends from the vulva externally to the uterine cervix internally. It is located within the pelvis, anterior to the rectum and posterior to the urinary bladder. the vagina lies at a 90º angle in relation to the uterus. the vagina is held in place by endopelvic fascia and ligaments (see the image below).

Superior view of pelvic organs.

the vagina is lined by rugae, which are situated in folds throughout. These allow easy distention, especially during child bearing. the structure of the vagina is a network of connective, membranous, and erectile tissues.

the pelvic diaphragm, the sphincter urethrae and transverse peroneus muscles, and the perineal membrane support the vagina. The sphincter urethrae and the transverse peroneus are innervated by perineal branches of the pudendal nerve. The pelvic diaphragm primarily refers to the levator ani and the coccygeus and is innervated by branches of sacral nerves S2-S4.

the vascular supply to the vagina is primarily from the vaginal artery, a branch of the anterior division of the internal iliac artery. several of these arteries may be found on either side of the pelvis to richly supply the vagina.

the nerve supply to the vagina is primarily from the autonomic nervous system. sensory fibers to the lower vagina arise from the pudendal nerve, and pain fibers are from sacral nerve roots. lymphatic drainage of the vagina is generally to the external iliac nodes (upper third of the vagina), the common and internal iliac nodes (middle third), and the superficial inguinal nodes (lower third). Chummys Sinnatamby 2011.

2-1-2-2 Uterus

The uterus is the inverted pear-shaped female reproductive organ that lies in the midline of the body, within the pelvis between the bladder and the rectum. It is thick-walled and muscular, with a lining that, during reproductive years, changes in response to hormone stimulation throughout a woman’s monthly cycle.

the uterus can be divided into 2 parts: the most inferior aspect is the cervix, and the bulk of the organ is called the body of the uterus (corpus uteri). Between these 2 is the isthmus, a short area of constriction.

the body of the uterus is globe-shaped and is typically situated in an anteverted position, at a 90º angle to the vagina. the upper aspect of the body is dome-shaped and is called the fundus; it is typically the most muscular part of the uterus. the body of the uterus is responsible for holding a pregnancy, and strong uterine wall contractions help to expel the fetus during labor and delivery.

the average weight of a nonpregnant, nulliparous uterus is approximately 40-50 g. a multiparous uterus may weigh slightly more than this, with an upper limit of approximately 110 g. a menopausal uterus is small and atrophied and typically weighs much less.

the cavity of the uterus is flattened and triangular. the uterine tubes enter the uterine cavity bilaterally in the superolateral portion of the cavity.

the uterus is connected to its surrounding structures by a series of ligaments and connective tissue. the pelvic peritoneum is attached to the body and the cervix as the broad ligament, reflecting onto the bladder. the broad ligament attaches the uterus to the lateral pelvic side walls. within the broad base of the broad ligament, between its anterior and posterior laminae, connective tissue strands associated with the uterine and vaginal vessels help to support the uterus and vagina. together, these strands are referred to as the cardinal ligament.

Rectouterine ligaments, lying within peritoneal folds, stretch posteriorly from the cervix to reach the sacrum. The round ligaments of the uterus are much denser structures and connect the uterus to the anterolateral abdominal wall at the deep inguinal ring. They lie within the anterior lamina of the broad ligament. Within the round ligament is the artery of sampson, a small artery that must be ligated during hysterectomy.

the vasculature of the uterus is derived from the uterine arteries and veins. the uterine vessels arise from the anterior division of the internal iliac, and branches of the uterine artery anastomose with the ovarian artery along the uterine tube.

the nerve supply and lymphatic drainage of the uterus are complex. Lymphatic drainage is primarily to the lateral aortic, pelvic, and iliac nodes that surround the iliac vessels. the nerve supply is attained through the sympathetic nervous system (by way of the hypogastric and ovarian plexuses) and the parasympathetic nervous system (by way of the pelvic splanchnic nerves from the second through fourth sacral nerves). Chummys Sinnatamby 2011.

2-1-2-3 Cervix

The cervix is the inferior portion of the uterus, separating the body of the uterus from the vagina. the cervix is cylindrical in shape, with an endocervical canal located in the midline, allowing passage of semen into the uterus. the external opening into the vagina is termed the external os , and the internal opening into the endometrial cavity is termed the internal os. The internal os is the portion of a female cervix that dilates to allow delivery of the fetus during labor. the average length of the cervix is 3-5 cm.

the vasculature is supplied by descending branches of the uterine artery, which run bilaterally at the 3 o'clock and 9 o’clock position of the cervix. the nerve supply to the cervix is via the parasympathetic nervous system by way of the second through fourth sacral segments. many pain nerve fibers run alongside these parasympathetics. lymphatic drainage of the cervix is complex. the obturator, common iliac, internal iliac, external iliac, and visceral parametrial nodes are the main drainage points. Chummys Sinnatamby 2011.

2-1-2-4 Uterine tubes

The uterine tubes (also referred to as oviducts or fallopian tubes) are uterine appendages located bilaterally at the superior portion of the cavity. their primary function is to transport sperm toward the egg, which is released by the ovary, and then to allow passage of the fertilized egg back to the uterus for implantation.

the uterine tubes exit the uterus through an area known as the cornua and form a connection between the endometrial and peritoneal cavities. Each tube is approximately 10 cm in length and 1 cm in diameter and is situated within a portion of the broad ligament called the mesosalpinx. the distal portion of the uterine tube ends in an orientation encircling the ovary.

the uterine tube has 3 parts. the first segment, closest to the uterus, is called the isthmus. The second segment is the ampulla, which becomes more dilated in diameter and is the typical place of fertilization. the final segment, furthest from the uterus, is the infundibulum. the infundibulum gives rise to the fimbriae, fingerlike projections that are responsible for catching the egg that is released by the ovary.

the arterial supply to the uterine tubes is from branches of the uterine and ovarian arteries, small vessels that are located within the mesosalpinx. the nerve supply to the uterine tubes is via both sympathetic and parasympathetic fibers. sensory fibers run from thoracic segments 11-12 and lumbar segment 1. lymphatic drainage of the uterine tubes is through the iliac and aortic nodes. Chummys Sinnatamby 2011.

2-1-2-5 Ovaries

The ovaries are paired organs located on either side of the uterus within the mesovarium portion of the broad ligament below the uterine tubes. the ovaries are responsible for housing and releasing the ova, or eggs, necessary for reproduction. at birth, a female has approximately 1-2 million eggs, but only 300 of these eggs ever mature and are released for the purpose of fertilization.

the ovaries are small and oval-shaped, exhibit a grayish color, and have an uneven surface. the actual size of an ovary depends on a woman’s age and hormonal status; the ovaries are approximately 3-5 cm in length during childbearing years and become much smaller and atrophic once menopause occurs. a cross-section of the ovary reveals many cystic structures that vary in size. these structures represent ovarian follicles at different stages of development and degeneration.

several ligaments support the ovary. the ovarian ligament connects the uterus and ovary. the posterior portion of the broad ligament forms the mesovarium, which supports the ovary and houses the vascular supply. the suspensory ligament of the ovary (infundibular pelvic ligament), a peritoneal fold overlying the ovarian vessels, attaches the ovary to the pelvic side wall.

blood supply to the ovary is via the ovarian artery; both right and left ovarian arteries originate directly from the descending aorta at the level of the L2 vertebra. the ovarian artery and vein enter and exit the ovary at the hilum.

the left ovarian vein drains into the left renal vein, and the right ovarian vein empties directly into the inferior vena cava.

nerve supply to the ovaries run with the vasculature within the suspensory ligament of the ovary, entering the ovary at the hilum. supply is through the ovarian, hypogastric, and aortic plexuses. lymphatic drainage of the ovary is primarily to the lateral aortic nodes; however, the iliac nodes may also be involved. Chummys Sinnatamby 2011.

Table (2-1) uterine size in deferent age and uterine body to –cervix Ratio. Chummys Sinnatamby 2011.

Stage	Uterine Length (cm)	Uterine Body-to-Cervix Ratio*
Neonatal	3.5	2:1
Pediatric	1–3	1:1
Prepubertal	3–4.5	1–1.5:1
Pubertal	5–8	1.5–2:1
Reproductive	8–9	2:1
Postmeno-pausal	3.5–7.5	1–1.5:1

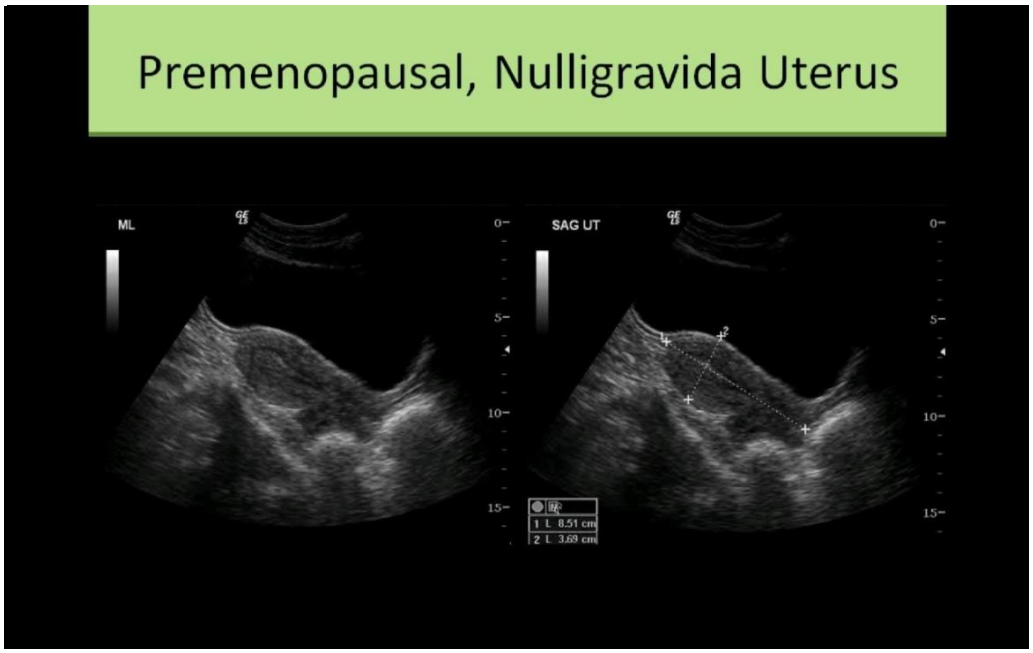

Figure (2-3) shows ultrasound image of premenopausal nulligravida uterus . Alfred Abohamed 2007.

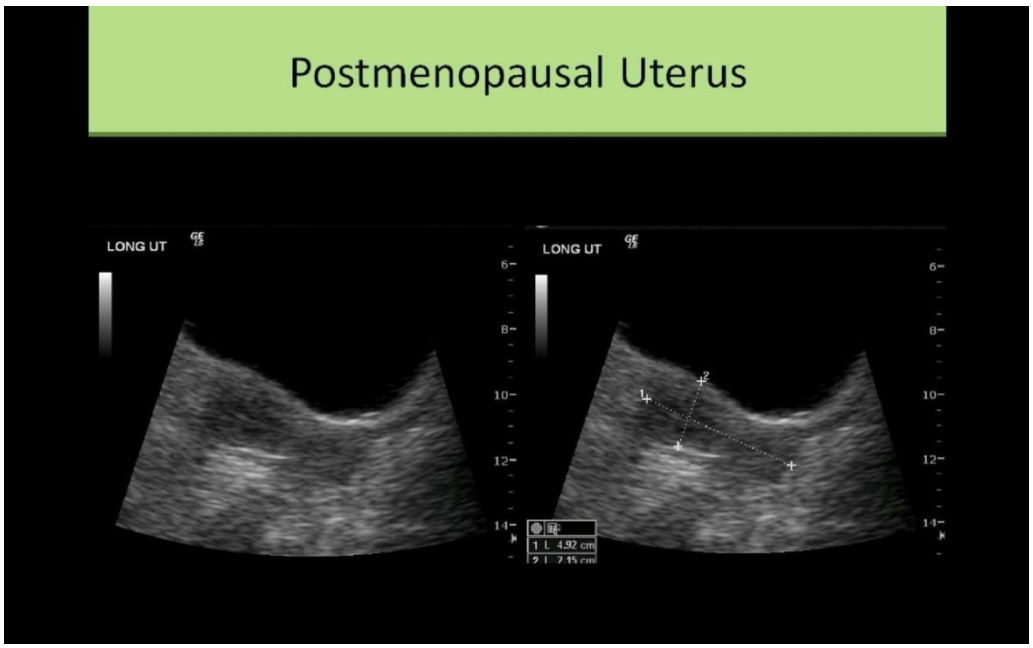

Figure (2-4) shows ultrasound image of postmenopausal uterus. Alfred Abohamed 2007.

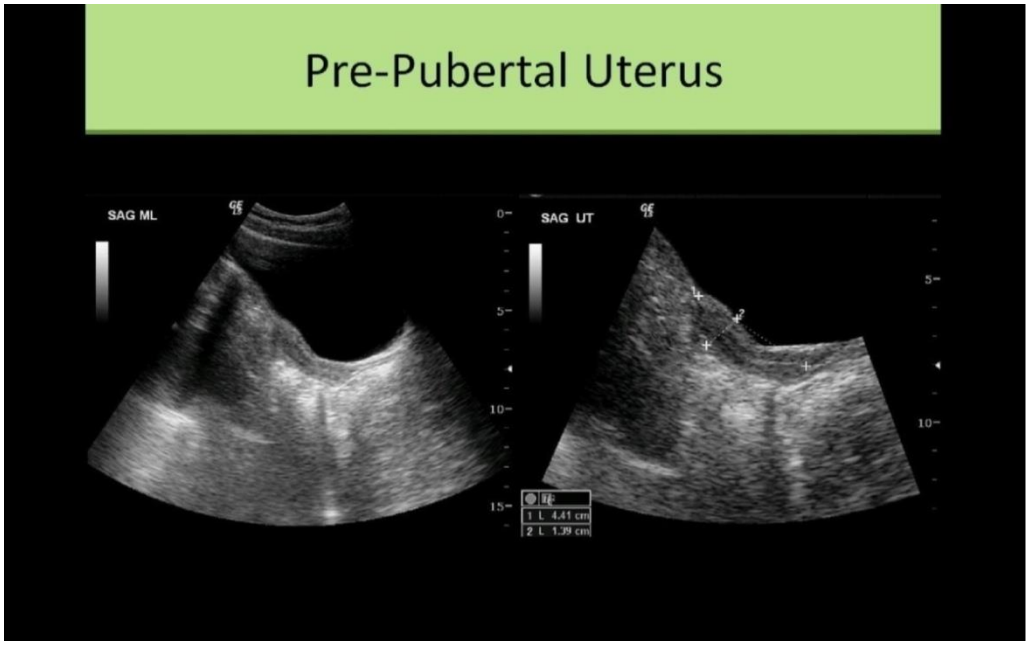

Figure (2-5) shows ultrasound image of pre-pubertal uterus. Alfred Abohamed 2007.

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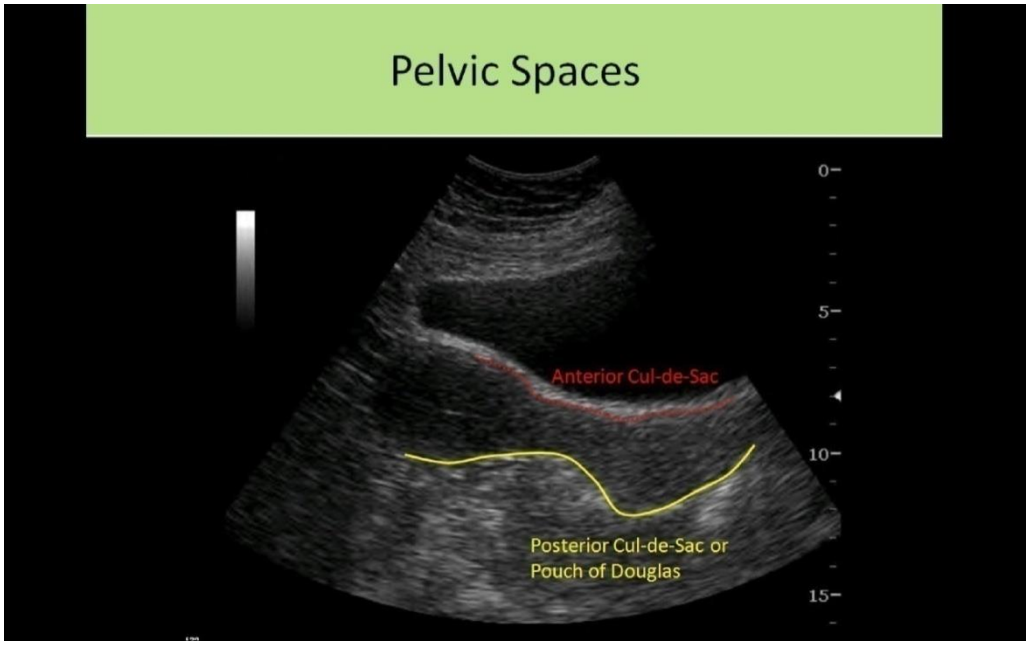


Figure(2-6) shows ultrasound image of pelvic spaes. Alfred Abohamed 2007.

2-1-2-6 Normal endometrial

Endometrial thickness is a commonly measured parameter on routine gynaecological ultrasound and MR imaging. the appearance, as well as the thickness of the endometrium, will depend on whether the patient is of reproductive age or post-menopausal and, if of reproductive age, at what point in the menstrual cycle they are examined. Alfred Abohamed 2007.

2-1-2-6 a- Sonographic features

Ultrasound (endovaginal)

The endometrium should be measured in the long axis or sagittal plane. the measurement is of the thickest echogenic area from one basal endometrial interface across the endometrial canal to the other basal surface. care should be taken not to include the hypo echoic myometrium in this measurement.

the normal endometrium changes in appearance as well as in thickness throughout the menstrual cycle:

- in the menstrual and early proliferative phase it is a thin, brightly echogenic stripe comprising of the basal layer (Figure 1). minimal fluid can be apprciated endovaginally within the endometrium in menstrual phase.
- in the late proliferative phase it develops a trilaminar appearance: outer echogenic basal layer, middle hypoechoic functional layer, and an inner echogenic stripe at the central interface.
- in the secretary phase it is at its thickest and becomes uniformly echogenic, as the functional layer becomes oedematous and isoechoic to the basal layer (Figure 2). there is through transmission and posterior acoustic enhancement noted.

the postmenopausal endometrium should be smooth and homogeneous.

Alfred Abohamed 2007.

2-1-2-6 b- Normal range of endometrial thickness

The designation of normal limits of endometrial thickness rests on determining at which the risk of endometrial carcinoma is significantly increased .

Whilst quantitative assessment is important, endometrial morphology and the presence of risk factors for endometrial malignancy should also be taken into account when deciding whether or not endometrial sampling is indicated.

Commonly accepted endovaginal ultrasound values are as follows.

Endometrial thickness

- menstrual: 1-3mm
- proliferative: 4-6mm
- secretory: 7-15mm

Upper limits of normal

- premenopausal: 10mm
- postmenopausal: 8mm

- postmenopausal on HRT: 12mm

Guidelines (post-menopausal):

- >8mm → biopsy
- 4-8mm w/ bleeding → biopsy
- <4mm w/ bleeding → endometrial atrophy

After D&C or spontaneous abortion, endometrium should be no thicker than 5mm or suspect RPOC.

Jane Bates 2010.

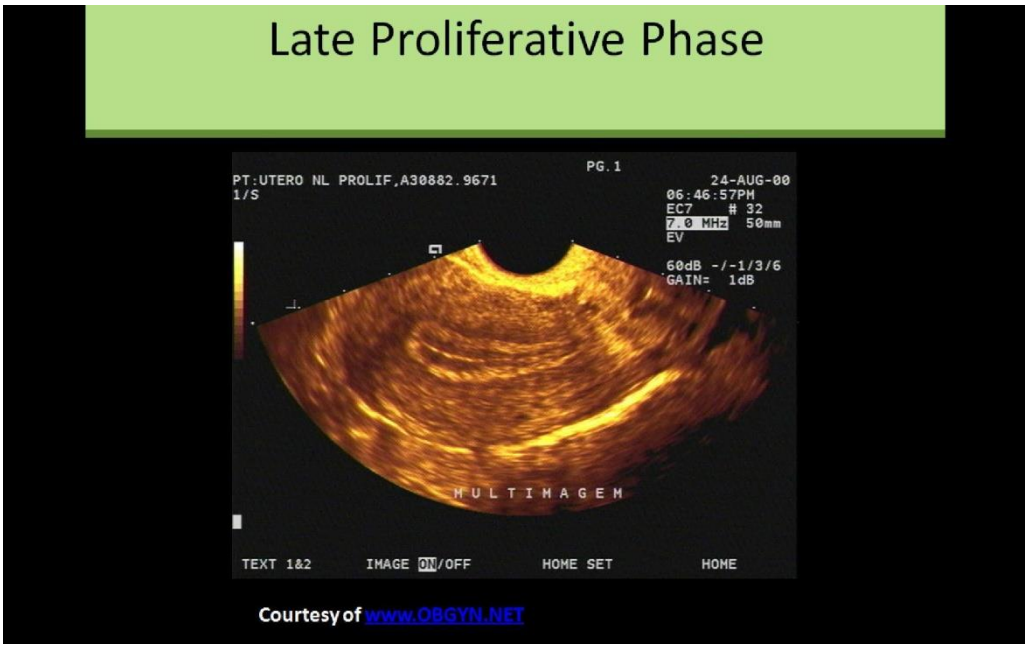


Figure (2-7) shows ultrasound image of Late Proliferative Phase. Jane Bates 2010.

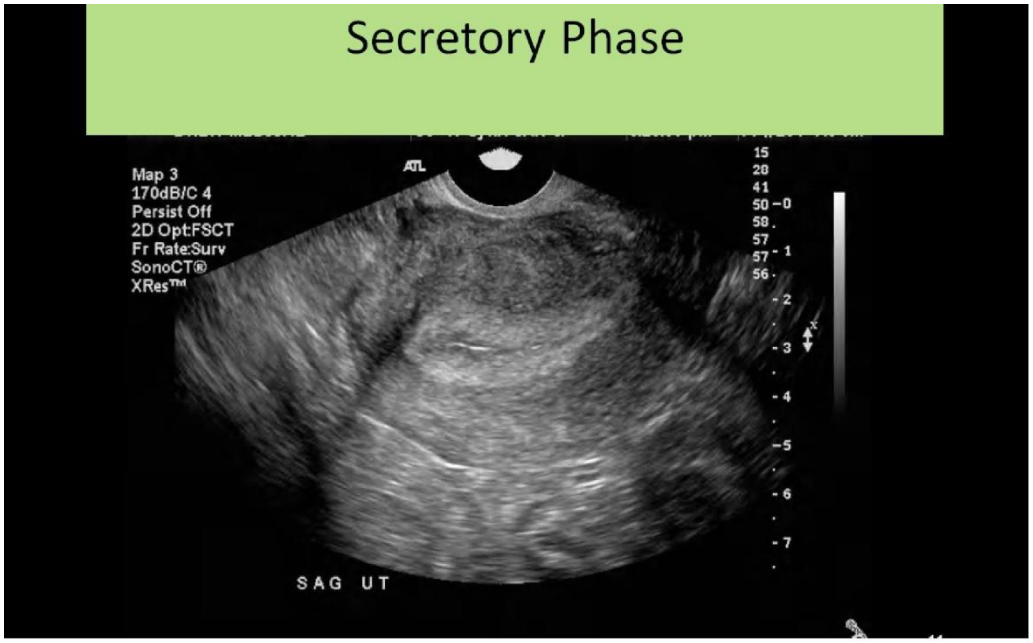


Figure (2-8) shows ultrasound image of Secretory Phase . Jane Bates 2010.

Table (2-2) shows causes of vaginal bleeding in post-menopausal women**.** Jane Bates 2010.

Cases of vaginal bleeding in post menopausal women	%
Polyps	30%
Sub-mucosal fibroids	30%
Endometrial atrophy	8%
Hyperplasia	4-8%
Endometrial carcinoma	10%

2-2 Causes of Vaginal Bleeding in Post-Menopausal Women:

2-2-1 Endometrial polyps

Are benign nodular protrusions of the endometrial surface, and one of the entities included in a differential of endometrial thickening. endometrial polyps can either be sessile or pedunculated. they can often be suggested on ultrasound or MRI studies, but may require sonohysterography or direct visualisation for confirmation. Alfred Abohamed 2007.

2-2-1 a -Epidemiology

The prevalence of endometrial polyps increases with age and ranges from 7.8-34.9%. endometrial polyps are frequently seen in patients receiving tamoxifen. Alfred Abohamed 2007.

2-2-1 b- Clinical presentation

Most polyps are asymptomatic although they can be a common cause of post-menopausal bleeding (can account for approximately 30% of cases [5]). in pre-menopausal women, they may cause intermenstrual bleeding, metrorrhagia, and infertility. Alfred Abohamed 2007.

2-2-1 c- Pathology

Polyps can be histologically characterized as localized hyperplastic overgrowths of glands and stroma. they consist of irregularly distributed endometrial glands and stroma and generally consist of three components:

- a stroma of focally or diffusely dense fibrous or smooth muscle tissue
- thick-walled vessels
- endometrial glands

2-4% of "benign" polyps with have a small focus of cancer within them.

Variants

- adenomyomatous endometrial polyp

Location:-

there may be a predilection towards the fundal and cornual regions within the uterus. They can be multiple in ~20% of cases. Alfred Abohamed 2007.

2-2-1 d- Sonographic features

Although endometrial polyps may be visualized at transvaginal ultrasound as nonspecific endometrial thickening, they may also be identified as focal masses within the endometrial canal.

- a stalk to the polyp may either be thin or broad based
- a feeding vessel may be seen extending to the polyp on colour Doppler imaging
- cystic spaces corresponding to dilated glands filled with proteinaceous fluid may be seen within the polyp and is considered a relatively characteristic feature [3]
- may appear as just diffusely thickened endometrium, without visualisation of a discrete mass (mimicking endometrial hyperplasia)
- Colour Doppler**:** may show flow within the stalk

3D ultrasound may be useful to help delineate the borders of a polyp.

Sonohysterography . Jane Bates 2010.

2-2-2 Endometrial carcinoma

Is generally considered the most common gynaecological malignancy . it frequently presents with vaginal bleeding and both ultrasound and pelvic MRI are useful modalities for evaluation. Alfred Abohamed 2007.

2-2-2 a- Epidemiology

Incidence peaks at around the 6th decade, though 12% of cases present in premenopausal women. the incidence is thought to be increasing. In the United States, there is a greater incidence among patients of European descent compared those of African American descent. Alfred Abohamed 2007.

2-2-2 b- Clinical presentation

Patients commonly present at an early stage, with postmenopausal bleeding as the initial symptom. Alfred Abohamed 2007.

2-2-2 c- Pathology

Endometrial carcinoma is divided to two subtypes:

- Type I (80%): arising in setting of unopposed hyperestrogenism and endometrial hyperplasia; mostly seen in women between 55 to 65 years old and are well differentiated tumours with relatively slow progression and more favourable outcome. PTEN gene mutation in 30 -80% of cases

2-2-2 d- Risk factors

1-any conditions that lead to increased oestrogen exposure

2 -oestrogen replacement therapy

3 -polycystic ovarian syndrome and anovulatory cycles

4 -Tamoxifen

5-obesity

6-early menarche or late menopause

7-nulliparity

8 -oestrogen producing tumours like granulosa cell cancer of ovaries

9-diabetes mellitus

- Type II (20%): arising in the setting of endometrial atrophy, in a female between 65 to 75 years old, and endometrial intraepithelial carcinoma. P53 mutation in up to 50%. this type tends to be less differentiated and spread early via lymphatic's or through fallopian tubes into peritoneum, hence it is associated with poorer prognosis compared to type I lesions

2-2-2 e- Histological types include

- type I :- endometrioid carcinoma of the endometrium: commonest histological type: ~85%
- type II :- papillary serous carcinoma of the endometrium 5-10% ,clear cell carcinoma of the endometrium 1-5.5% , adeno carcinoma of the endometrium with squamous differentiation 0.25-0.50% and finaly

small cell undifferentiated carcinoma of the endometrium

Associations

- hereditary non-polyposis colon cancer (HNPCC) · estimated 30-50x increased the lifetime risk
- precursor lesions of complex hyperplasia with atypia are associated with an endometrial carcinoma in over 40% of cases.

2-2-2 f - Staging

See: endometrial carcinoma staging most tumours (~80%) present as stage I disease. Alfred Abohamed 2007.

2-2-2 g- Sonographic features

Transvaginal ultrasound is the initial imaging investigation of choice for patients presenting with the usual symptom of a postmenopausal bleed. a thickened endometrium requires endometrial sampling.

staging of endometrial carcinoma is a based on the FIGO staging system, which is a surgical and pathological staging following total abdominal hysterectomy, salpingo-oopherectomy, lymphadenectomy and peritoneal washings. such radical surgery may not be suitable in elderly patients or those with co-morbidities. MRI has a role in these patients in determining tumour extent and suitable therapy.

Transvaginal ultrasound

endometrial carcinoma usually appears as thickening of the endometrium though may appear as a polypoid mass

- premenopausal: normal endometrial thickness varies through the menstrual cycle

- diagnosing abnormally thickened endometrium depends on knowing what the patient's point in the menstrual cycle

Jane Bates 2010

2-2-3 Endometrial hyperplasia (EH)

Refers to an increased proliferation of the endometrial glands relative to the stroma. One of the main concerns is the potential malignant transformation of the endometrial hyperplasia to the endometrial carcinoma Alfred Abohamed 2007.

2-2-3 a- Clinical presentation

A great majority of patients present with abnormal uterine bleeding. Alfred Abohamed 2007.

2-2-3 b- Pathology

Hyperplasia with increased gland to stroma ratio; there is a spectrum of endometrial changes ranging from glandular atypia to frank neoplasia.

there are several types of endometrial hyperplasia, which include:

1- simple hyperplasia without atypia also known as cystic endometrial hyperplasia
2- simple hyperplasia with atypia
3- complex hyperplasia without atypia
4- complex hyperplasia with atypia

hyperplasia can be also classified into two broad groups :

1- hyperplasia without cellular atypia
2- hyperplasia with cellular atypia

Associations

Unopposed oestrogen stimulation (either from an endogenous or exogenous source) is implicated in its pathogenesis; some of these conditions are:

1-obesity

2- polycystic ovary syndrome

3-pregnancy (and ectopic pregnancy)

4-oestrogen secreting ovarian tumours

5- granulosa cell tumour of the ovary
6- tamoxifen .
Alfred Abohamed 2007.

2-2-3 c- Sonographic features

Imaging the endometrium on days 5-10 of a woman's cycle reduces the variability in endometrial thickness.

- Premenopausal
    - normal endometrial thickness depends on the stage of the menstrual cycle, but a thickness of >15 mm is considered top normal in the secretory phase
    - hyperplasia can be reliably excluded in patients only when the endometrium measures less than 6 mm [1]
- postmenopausal
    - a thickness of >5 mm is considered abnormal

the appearance can be non-specific and cannot reliably allow differentiation between hyperplasia and carcinoma [5]. usually, there is a homogeneous increase in endometrial thickness, but endometrial hyperplasia may also cause asymmetric/focal thickening with surface irregularity, an appearance that is suspicious for carcinoma. .

Jane Bates 2010.

2-2-4 Endometritis

Ultrasound is nonspecific

- may see endometrial fluid, debris, gas
- caused by PID, postpartum, postinstrumentation, IUD. Alfred Abohamed 2007.

2-2-5 Endometrioma / Endometriosis

Adnexal cyst filled with homogeneous low-level echoes (“ground glass” appearance) or reticular septations, similar to hemorrhagic cyst,

may be multilocular with areas of anechoic fluid or may have fluid-fluid levels ,often multiple, associated with metrorragia, dysmenorrhea, infertility . Alfred Abohamed 2007.

Figure : (2-9) shows ultrasound image of endometrial hyper plasia. Alfred Abohamed 2007.

Figure : (2-10) shows ultrasound image of endometrial carcinoma. Alfred Abohamed 2007.

2-2-6 Fibroids

Three types:- intramural (confined to myometrium submucosal (projecting into endometrium), and subserosal (projecting from serosal surface) ,color doppler will identify vessels , have increased risk of pregnancy loss , may cause pain during pregnancy , may obstruct vaginal delivery , may cause placental abruption or IUGR , leiomyosarcomas enlarge over time diagnoses of submucosal fibroid may be aided with sonohysterogram ,heterogeneous appearance due to:

1- necrosis
2- calcification
3- cystic degeneratio. Alfred Abohamed 2007.

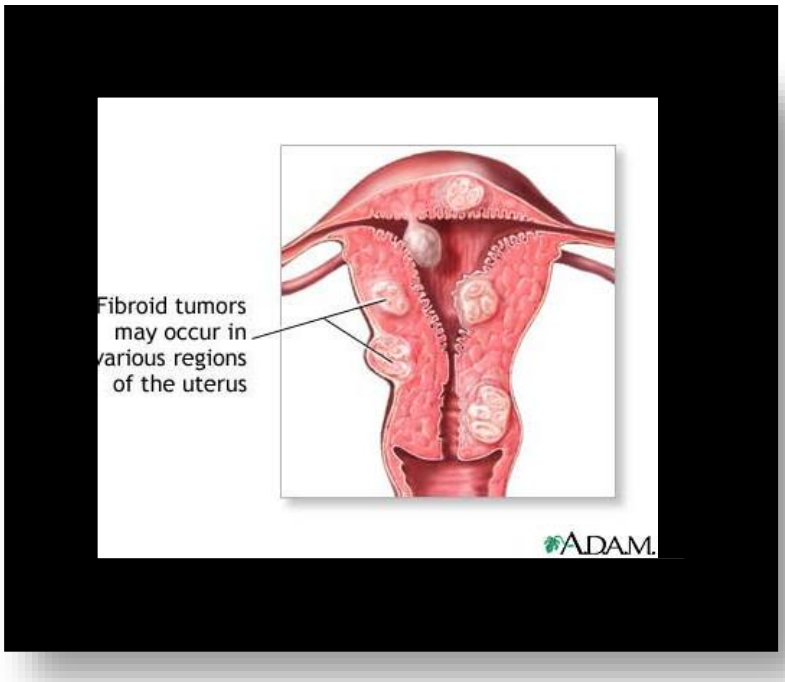


Figure : (2-11) shows fibroid tumors in various regions of the uterus. Alfred Abohamed 2007.

Taple (2-3) shows Ovarian Volume in defrent Age and ovarian Appearane . Alfred Abohamed 2007.

Stage	Ovarian Volume (cm^3)	Ovarian Appearance*
Neonatal	1–3.5	Follicles and cysts common
Pediatric	0.5–1.5	Fewer than six follicles; cysts uncommon
Prepubertal	1–4	Follicles and cysts common
Pubertal	2–6	Follicles and cysts common
Reproductive	4–16	Follicles and cysts common
Postmenopausal	1.2–5.8	Follicles and cysts in approximately 15%–20%

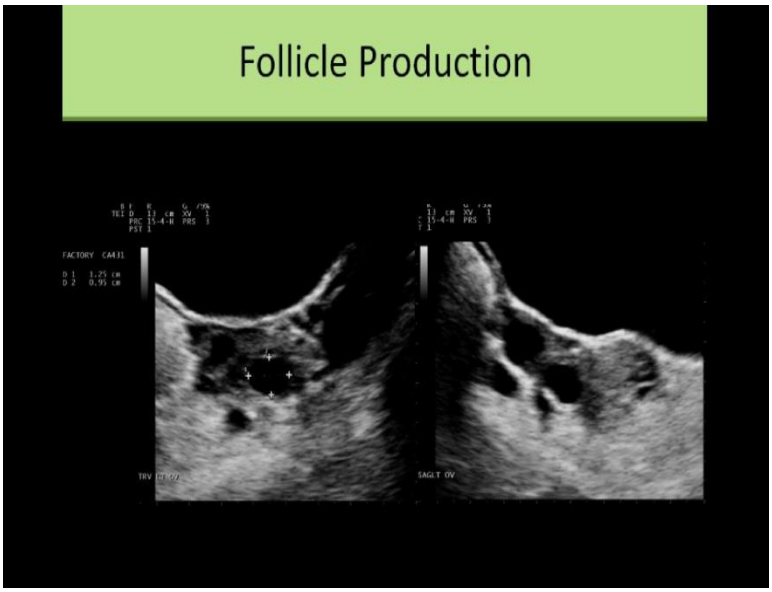


Figure: (2-12) shows ultrasound image of follile prodution. Jane Bates 2010.

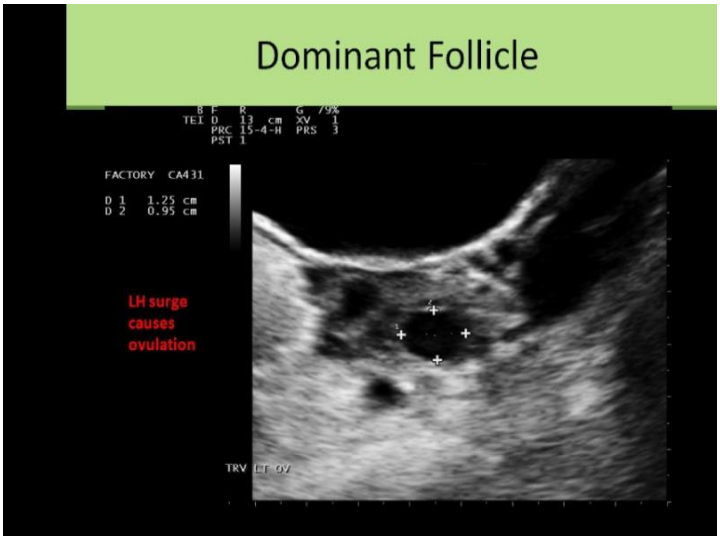


Figure (2-13) shows ultrasound image of dominant follicle. Jane Bates 2010.

Figere (2-14)shows ultrasound image of intramural fibroids.Jane Bates 2010

Figure(2-15)shows ultrasound image of submucosal fibroids.Jane Bates 2010

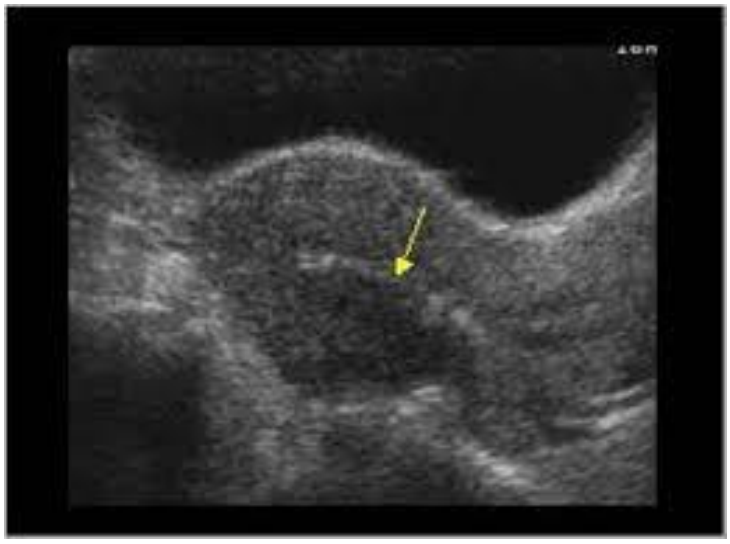


Figure (2-16) shows ultrasound imageof subserosal fibroids.Jane Bates 2010

2-2-7 Cervical pathology

2-2-7 a- Nabothian Cyst

- Multiple cysts within the cervix

  Alfred Abohamed 2007.

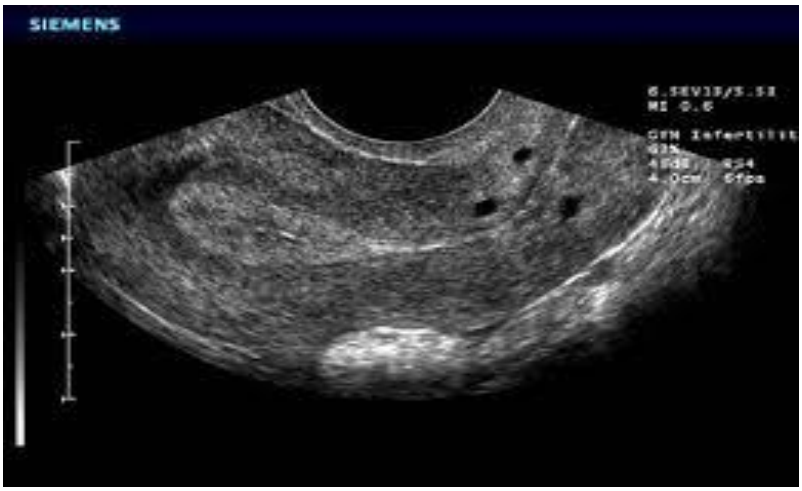


Figure (2-17) shows ultrasound image of nabothian cyst. Jane Bates 2010

2-2-7 b- Cervical Cancer

- typically Squamuse cell carcinoma SCC
- cervical stenosis with endometrial fluid collection
- parametrial invasion
  - irregular, poorly defined margins of lateral cervix
  - prominent ST stranding

  obliterated fat plane . Alfred Abohamed 2007.

2-2-7 b1 Cervical Cancer Staging

- Stage 1 - confined to cervix
- Stage 2 - beyond cervix, but not to pelvic sidewall or lower 1/3 of vagina , 2A - vaginal invasion (upper 2/3) .2B - parametrial invasion
- Stage 3 - extends to lower 1/3 of vagina , 3A - lower 1/3 of vagina , 3B - pelvic sidewall

- Stage 4 - , 4A - bladder or rectal invasion , 4B - distant mets (typically lung and liver).

  Alfred Abohamed 2007.

2-2-7 Adenomyosis

Form of endometriosis where there is aberrant endometrial tissue in the myometrium ,Diffuse or focal , US - Sonographic appearance overlaps w/ fibroids, but presence of small cysts or hypoechoic areas or variation during menstrual cycle is suggestive of adenomyosis, Irregular, myometrial, cystic spaces predominantly involving the posterior uterine wall, an enlarged uterus with a widened posterior wall (see Image 1), an eccentric endometrial cavity, and decreased uterine echogenicity without lobulations, contour abnormality, or mass effects (which is more commonly seen with leiomyomas). Sonograms may also show an ill-defined margin between the normal myometrium and the abnormal myometrium, as well as an elliptically shaped myometrial abnormality. Alfred Abohamed 2007.

2-3 Adnexiae pathology

Adnexa include

1- ovary, fallopian tube, and broad ligament(contains fallopian tube and uterine artery)
2- fallopian tube segments – intramural, isthmus, ampulla, and infundibulum.
3- isthmus is narrowest segment

Alfred Abohamed 2007.

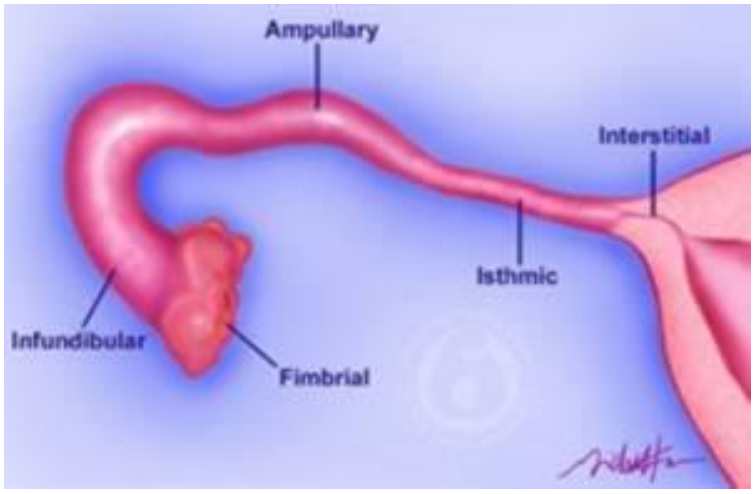


Figure (2-18) shows adnexal organes . Alfred Abohamed 2007.

2-3-1 Adnexal Mass

2-3-1 a - Benign Ovarian Neoplasm's

- mucinous or serous cystadenomas, Brenner tumors
- granulosa cell tumors, fibromas, thecomas (secrete estrogens –> endometrial hyperplasia)
- Sertoli-Leydig cell tumors (secrete androgens –> virilization)
- cannot differentiate from malignant neoplasms
- complex lesions with septations and solid tumor nodules

Alfred Abohamed 2007.

Figure (2-19)shows ultrasound image of benign ovarian neoplasm's. Jane Bates 2010.

Figure (2-20) shows ultrasound image of benign ovarian neoplasm's. Jane Bates 2010.

2-3-1b- Ovarian Teratomas

most common benign ovarian neoplasm , classic mimicker , rarely malignant , at risk for torsion , complex, partially cystic, w/ echogenic areas that may shadow , dermoid plug = Rokitansky nodule , presence of struma ovarii can (rarely) cause thyrotoxicosis.

Alfred Abohamed 2007.

2-3-2 Cystic Adnexal Mass

1- Hydrosalpinx.
2- cystic teratoma.
3- corpus luteum cyst.
4- benign or malignant ovarian tumor.

Alfred Abohamed 2007.

2-3-2 a- Polycystic Ovaries

This include enlarged ovaries , echogenic stroma , cysts in periphery (>5 cysts over 5mm in size) and treated with clomiphene.

Peter.callen 2016.

2-3-2 b- Stein – Leventhal

PCO, obesity, infertility / amenorrhea, and hirsutism . Peter callen 2016.

Figure (2-21) shows ultrasound image of polycystic ovaries. Peter callen 2016.

2-3-2 c- Hemorrhagic Cysts

Fine reticular septations or heterogeneous mass w/ multiple echoes , resolves spontaneously (f/u 6-8 wks) , difrential diagnoses include endometrioma, hemorrhagic corpus luteum cyst, dermoid, follicular cyst . Alfred Abohamed 2007.

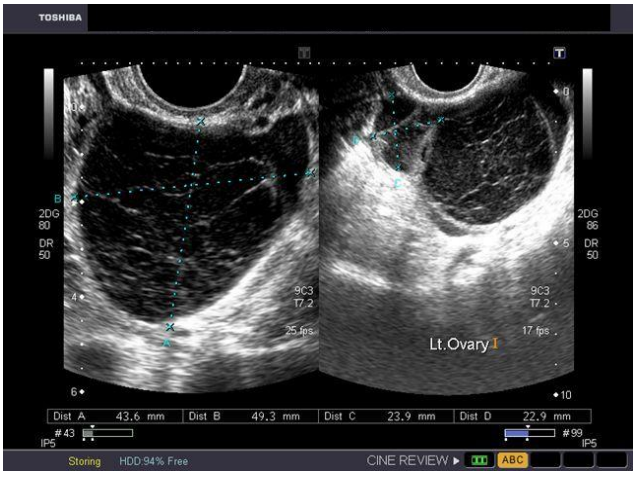


Figure (2-22) shows ultrasound image of hemorrhagic cysts**.** Alfred Abohamed 2007.

2-3-2 d- Hydrosalpinx

Caused by PID, endometriosis, prior instrumentation, leading to adhesions that obstruct the peritoneal opening of the tube , infected = pyosalpinx . Alfred Abohamed 2007.

Figure (2-23) shows ultrasound image of hydrosalpinx. Alfred Abohamed 2007.

2-3-2 e - Tubo-Ovarian Abscess

Severe form of PID, usually bilateral , complex, multiloculated adnexal mass w/ echoes from debris/pus , may have thick septations, ovary may be encased , choriocarcinoma – develops infrequently after molar evacuation.

Alfred Abohamed 2007.

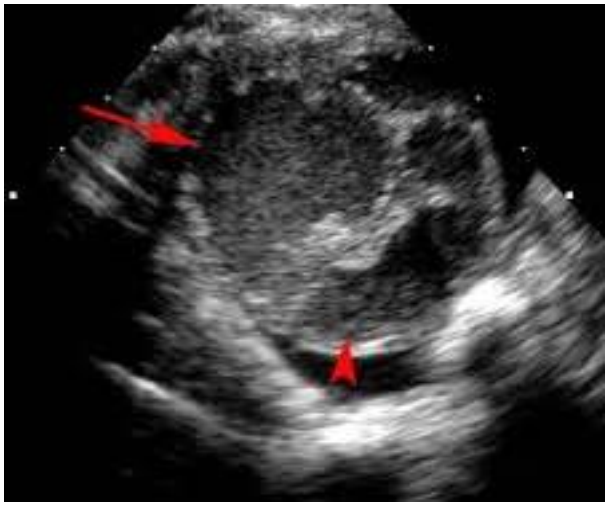
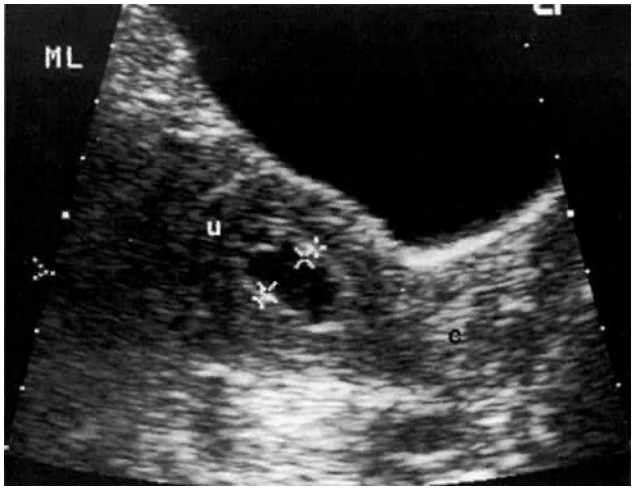


Figure (2-24) shows ultrasound image of tubo-ovarian abscess. Alfred Abohamed 2007.

2-4-1 Endometrial Fluid

Cased by cervical stenosis , cervical carcinoma , hydrometrocolpos and endometritis .

Alfred Abohamed 2007.



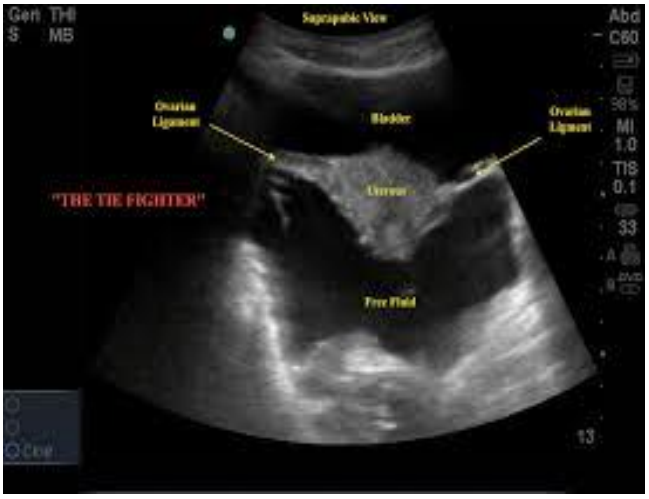
Figure(2-25)shows ultrasound image of endometrial fluid. Alfred Abohamed 2007.

Figure(2-26)shows ultrasound image of endometrial fluid. Alfred Abohamed 2007.

2-5-1 Pelvic Free Fluid

Separate into gynecologic and non-gynecologic etiologies.

Alfred Abohamed 2007.



Figure(2-27) shows ultrasound image of pelvic free fluid. Alfred Abohamed 2007.

2-6 Previous studyies

Age-related differential diagnosis of vaginal bleeding in postmenopausal women: a series of 3047 symptomatic postmenopausal women.

Study done by Burbos N ,et al. 2006 – 2009.

The aim of this study is to identify the causes of vaginal bleeding in different age groups of postmenopausal women. Also, we attempt to estimate the incidence of postmenopausal vaginal bleeding and endometrial cancer in a defined geographical area. during the study period 3047 women were referred with postmenopausal vaginal bleeding. In 1356 women (44.5%) the endometrial thickness measured less than 5 mm on transvaginal ultrasound scan. Benign histology was found in 1144 women (37.5%). Benign endometrial polyps were the cause of bleeding in 10.1% of the cases. The incidence of endometrial cancer in our study population was 5%. The rate of postmenopausal vaginal bleeding during the study period peaks at the age of 55-59 years (25.9/1000 postmenopausal women/year) and declines thereafter. The peak incidence of endometrial cancer during the study period (12.6/10,000 postmenopausal women/year) was seen between the ages of 60 and 64 years and similarly declines with increasing age. The results of this study showing the age-related differential diagnosis can be used to inform clinical practice when counselling postmenopausal women with vaginal bleeding.

(Burbos 2009.)

Predicting the risk of endometrial cancer in postmenopausal women presenting with vaginal bleeding.

Study done by Burbos, et al . 2010.

This study aimed to show the longitudinal use of routinely collected clinical data from history and ultrasound evaluation of the endometrium in developing an algorithm to predict the risk of endometrial carcinoma for postmenopausal women presenting with vaginal bleeding,

this prospective study collected data from 3047 women presenting with postmenopausal bleeding. Data regarding the presence of risk factors for

endometrial cancer was collected and univariate and multivariate analyses were performed.

age distribution ranged from 35 to 97 years with a median of 59 years. a total of 149 women (5% of total) were diagnosed with endometrial carcinoma. women in the endometrial cancer group were significantly more likely to be older, have higher BMI, recurrent episodes of bleeding, diabetes, hypertension, or a previous history of breast cancer. An investigator best model selection approach was used to select the best predictors of cancer, and using logistic regression analysis we created a model, 'Norwich DEFAB', which is a clinical prediction rule for endometrial cancer. The calculated Norwich DEFAB score can vary from a value of 0 to 9. A Norwich DEFAB value equal to or greater than 3 has a positive predictive value (PPV) of 7.78% and negative predictive value (NPV) of 98.2%, whereas a score equal t

they conclude that the combination of clinical information with our investigation tool for women with postmenopausal vaginal bleeding allows the clinician to calculate a predicted risk of endometrial malignancy and prioritise subsequent clinical investigations.
(Burbos 2010.)

Study of postmenopausal vaginal bleeding in women with endometrial polyps .

Study done by Fernández -Parra et al. 2007-2010.

The study conducted a retrospective chart review to determine the incidence of malignant polyps in postmenopausal women. of 1870 hysteroscopy's conducted at the study centre, 653 had confirmed polyps. the majority of women had postmenopausal bleeding, and only 117 women were asymptomatic. no cases of cancer in a polyp were found in asymptomatic women. (Fernandes 2010) .

Other study under the same title Done by Gregoriou et al.2009 they published a retrospective analysis of 516 cases of women who underwent hysteroscopic Polypectomy to determine risk factors for malignancy. the final pathology report after polyp resection was compared with each patient chart. the majority of polyps were benign (96.9%), and a small percentage were premalignant (1.2%) or malignant (1.9%). Obesity (BMI > 30) (*P* =

0.001), diabetes mellitus (P = 0.04), menopause (P = 0.005), and age > 60 years (P = 0.001) were all significant risk factors for the development of malignant polyps. Also they suggested that all clinical parameters must be considered to assess the risk of the malignancy potential of a polyp in a postmenopausal woman. (Gregoriou 2009) .

Study of endometrial thickening in women on hormonal therapy (HT).

Study done by Mossa et al., in 2010 the threshold of endometrial thickness was investigated in 587 women on HT. an increased endometrial thickness and increased incidence of bleeding was found in the HT group. however, no difference in the prevalence of endometrial cancer was found between the HT and control groups. the authors recommended that women with bleeding on HT undergo hysteroscopy and biopsy only if endometrial thickness is > 8 mm. (Mossa 2010) .

Evaluation of the effect of anti-hypertensive drugs on the endometrial thickness in asymptomatic postmenopausal women.

Study done by Martinez-Rubio 2009.

The study prospectively compared the prevalence of abnormal endometrium in 187 postmenopausal a symptomatic, normotensive women and 182 asymptomatic postmenopausal women receiving anti-hypertensive drugs. the endometrium was assessed via office endometrial biopsy and TVUS when the definition of abnormal ultrasound was > 5 mm. women taking antihypertensive medications were significantly more likely than normotensive women to have endometrial thickness > 5 mm

(26.9% versus. 12.8%; P 0.001), heterogeneous endometrial polyps (23.1 versus. 12.8%; P < 0.001), and endometrial polyps

(17.6 versus. 9.6%; P < 0.001). These results were independent

of body mass index. (Martinez-Rubio 2009) .

Screening study of a symptomatic post menopause women .

Study done by Gambacciani et al.2007.

The study undertook a retrospective review of 850 postmenopausal women who were investigated with outpatient hysteroscopy for various

causes of thickening. The authors focused on the 148 asymptomatic postmenopausal

women with endometrium > 4 to 5 mm, and found 1 case of adenocarcinoma (0.7%) (endometrium 16 mm) and 9 cases of hyperplasia (6.1%). In this study 24/27 cases of adenocarcinoma presented with bleeding, 2/27 had an

abnormal Papanicolaou smear, and 1/27 (3.7%) had thickened endometrium. One hundred forty-seven hysteroscopies were performed for benign pathology; the false positive rate was 93.2%. (Gambacciani 2007) .

Other screening study done by Archer et al. 2012. attempted to obtain endometrial samples in 801 asymptomatic premenopausal and postmenopausal women prior to enrolment in a multicentre hormone replacement therapy study. Of the samples, 75% contained sufficient tissue for diagnosis. one endometrial cancer was diagnosed, illustrating the low incidence of disease in asymptomatic women and the low incidence of disease in asymptomatic women. the endometrium was atrophic in 46.9%, proliferative in 16.7%, secretory in 6.8%, and hyperplastic in 5.2%. (Archer 2012).

Diagnostic value of sonography for detecting endometrial pathologies in postmenopausal women with and without bleeding.

Study done by Archer. 2013.

In this study 602 postmenopausal women with vaginal bleeding or a symptomatic thickened endometrium , 274 women with postmenopausal vaginal bleeding regardless of endometrial thickness((group 1) and 328 women with an incidental finding of thickened endometrium with or without bleeding (group2) were evaluated in this study. they conclude that sonographically determined endometrial thickness measurement shows high diagnostic performance for detection of endometrial cancer in symptomatic postmenopausal women at the optimal cutoff thickness of approximately 8 mm, although the evidence supporting the use of sonography for predicting malignancy in a symptomatic women is inconclusive.

(Archer 2013).

CHAPTER THREE

Material and methods

3-1 material

3-1-1 Patients and sampling:

Fifty patients were screened, from Khartoum state , they are of age between (40 to 70 years) with post menopausal vaginal bleeding not due truma .

Firstly ultrasound scanning was done for patients to evaluate uterine size and texture , endometrial thickness, size and texture of mass if present .

3-1-2 Area and duration of the study:

This study was started in September 2015 and continued up march 2016. The study was carried out in Khartoum state.

3-1-3 Equipment used:

(A) An ultrasound machines of facilities as shown in the following table:

Table: (3-1) shows ultrasound machines used in the study

U/S machine name	Aloka	Honda	General Electric
Model	SSD 500	HS 2000	LOGIQ **5**
Movement	Portable	Portable	Mobile
Type of probe	Curvilenear	Curvilenear	- Curvilenear - Linear - Transvaginal
Energy of probe	3.5 MHz	3.5 MHz	- 3.5 MHz - 10 MHz - 7.5 MHZ

- **All these machines have Printer with thermal paper**

Figure (3.1). Shows General electric LOGIQ 5 which used in this study

Figure (3.2). Shows Honda 2000 Machine which used in this study

Figure (3.3). Shows ALOKA SSD 500 machine which used in this study

3-1-4 Source of data collection:

Using a special data collection sheet (questionnaire), a random sample of 50 cases were studied, the data collecting sheet was designed to cover the assessment personal history , clinical signe and symptoms , and ultrasound findings .

3-2 **methods**

3-2-1 Technique used:

Trans abdominal U/S scanning:

3-2-1 (A) Patient Preparations:

The bladder must be full enough, gives patient 4 to 5 glasses of fluid and examined after one hour. do not allow the patient to micturate, alternatively fill the bladder through a urethral catheter with sterile normal saline, stop when patient feels uncomfortable, avoid catheterization if possible because of the risk of infection. avoid over distention of the urinary bladder was critical because it is worse as an empty urinary bladder; if the patient cannot retain urine give his lasex (20 mg/ I V or tabs). this procedure is restricted to patient without any cardiac problem .

3-2-1 (B) Position of the patient:

The patient should lie supine, the patient should be relaxed, lying comfortably and breathing quietly, lubricates the lower abdomen with coupling agent. hair anywhere on the abdomen will trap air bubbles so apply coupling agent generously.

3-2-1 (C) Choice of transducer:

Uses a curve linear probe of 3.5 MHZ frequency.

3-2-1 (D) Scanning technique:

Start with a transverse scans from the symphysis pubis up wards to the umbilicus and we must be angle the probe sharply down word until the uterus appears in the center of the screen and endometrial line appear , adjusted the gain of the image and freeze it, here I measured the width of the uterus. then sagital scane from the symphysis pubis up wards to the umbilicus and we must be angle the probe sharply down word until the uterus appears in the center of the screen and endometrial line appear , adjusted the gain of the image and freeze it, here I measured the length , AP diameter and endometrial thickness .then I scan from one side to another to evaluate the uterine shape, if it is normal or abnormal, also evaluate the uterine texture, and texture and size of mass if present .

3-2-2 Data analysis:

The data analyzed using SPSS program. the data was coded and analyzed using statistical computed analysis in form of frequencies and cosstabulation tables. The results were obtained after the contents of data-collection sheets, were changed into numerical values for the purpose of the computer use, These numerical values being symbolized, they again gave us true valuable results.

3-2-3 **Variables of the study:**

-patients age

-family history

-socio economic status

-associations disorder

-life style

-firtelity

3.2.4 Data collection:

3.2.4.1- Data collection sheet

3.2.3.1- Image interpretation: -appearance and echo texture

Chapter Four

Data Analysis and Result

Table (4-1) shows the distribution of the patients according to their age class. as shown in the below figure.

Age group	Frequency	Percent	Percent	Cumulative Percent
40-49 Years	5	10.0	10.0	10.0
50-59 Years	31	62.0	62.0	72.0
60-69 Years	14	28.0	28.0	100.0
Total	50	100.0	100.0	

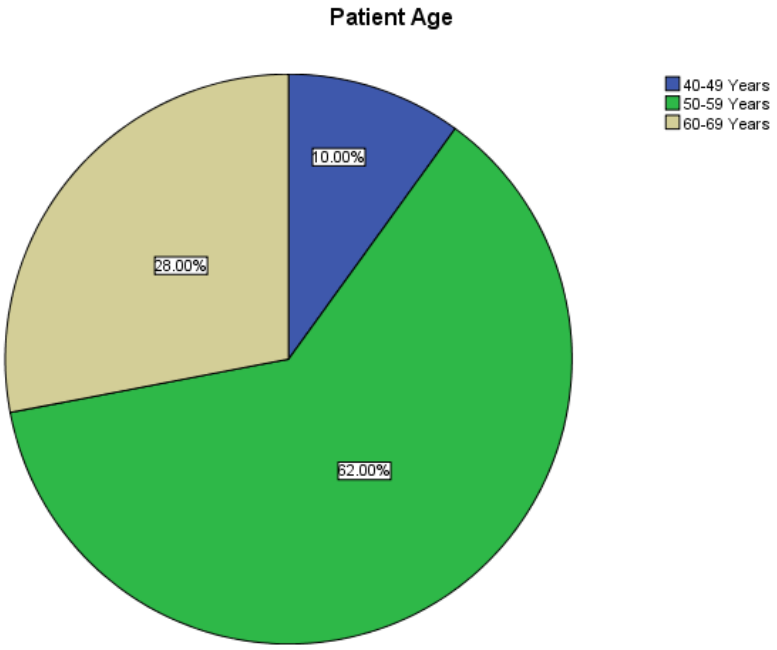


Figure (4-1) shows Age group.

Table (4-2) presents the distribution of the patients according to the fertility status. as shown in the below figure.

fertility status	Frequency	Percent	Percent	Cumulative Percent
Fertile	39	78.0	78.0	78.0
Unfertile	11	22.0	22.0	100.0
Total	50	100.0	100.0	

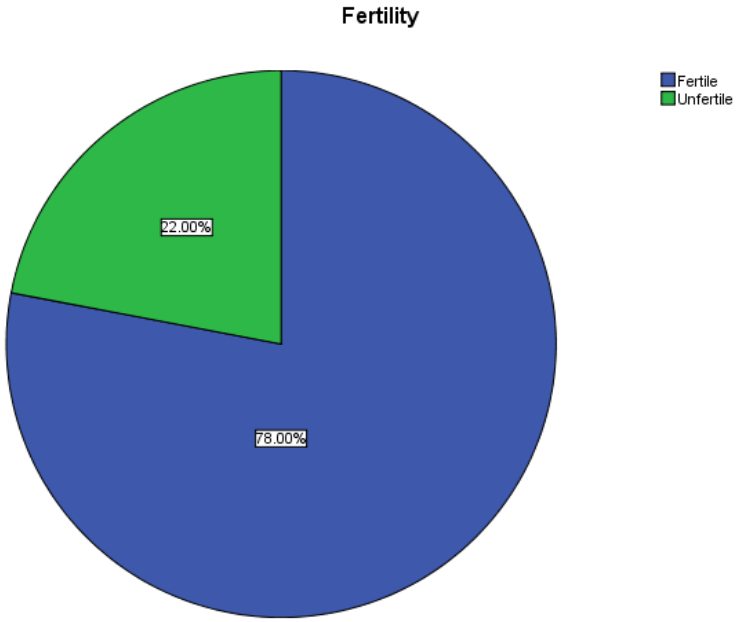


Figure (4-2) shows fertility status.

Table (4-3) shows the distribution of the patients according to their age of menopause. as shown in the below figure.

age of menopause	Frequency	Percent	Percent	Cumulative Percent
40 Years	5	10.0	10.0	10.0
41 Years	4	8.0	8.0	18.0
42 Years	19	38.0	38.0	56.0
43 Years	12	24.0	24.0	80.0
44 Years	8	16.0	16.0	96.0
45 Years	2	4.0	4.0	100.0
Total	50	100.0	100.0	

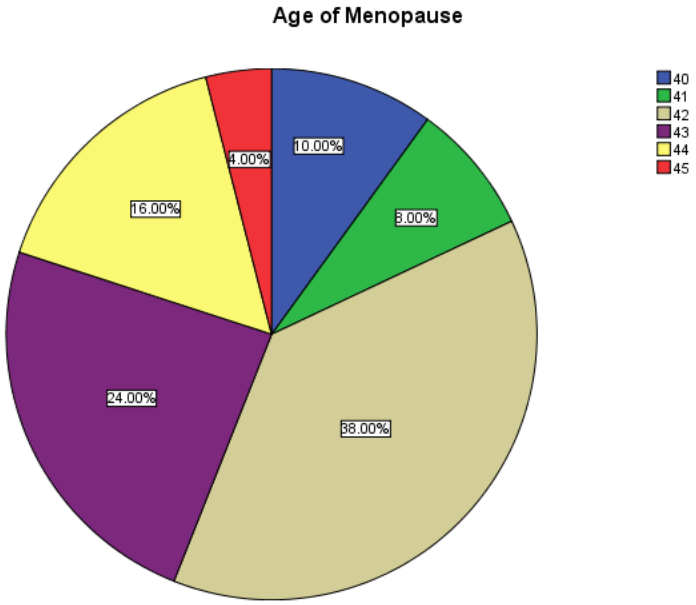


Figure (4-3) shows age of menopause.

Table (4-4) shows the distribution of patients according to age when menopause vaginal bleeding started . as shown in the below figure.

age when menopause vaginal bleeding started	Frequency	Percent	Percent	Cumulative Percent
45-49 Years	5	10.0	10.0	10.0
50-54 Years	23	46.0	46.0	56.0
55-59 Years	17	34.0	34.0	90.0
Above 60 Years	5	10.0	10.0	100.0
Total	50	100.0	100.0	

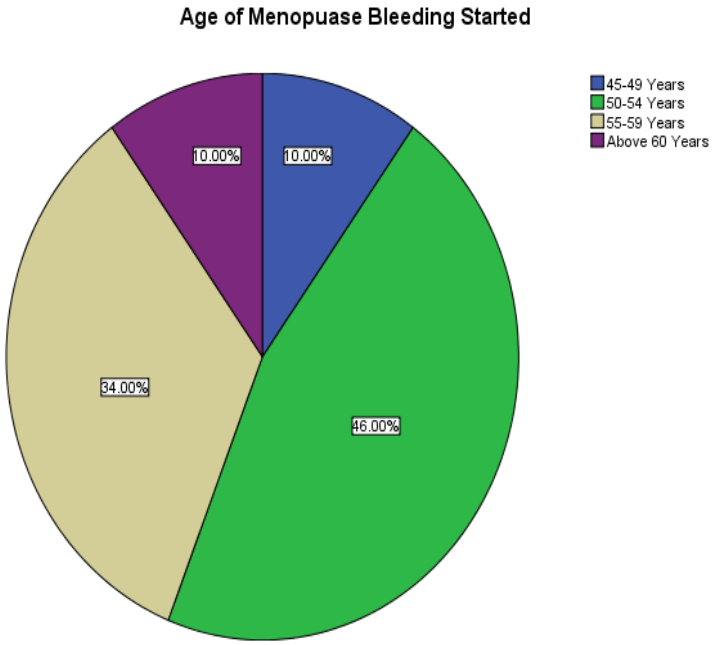


Figure (4-4) shows age when menopause vaginal bleeding started

Table (4-5) shows the distribution of the patients according to the number of pregnancy. as shown in the below figure

number of pregnancy	Frequency	Percent	Percent	Cumulative Percent
No Pregnancy	12	24.0	24.0	24.0
1-3 Pregnancies	8	16.0	16.0	40.0
4-6 Pregnancies	22	44.0	44.0	84.0
More than 6 Pregnancies	8	16.0	16.0	100.0
Total	50	100.0	100.0	

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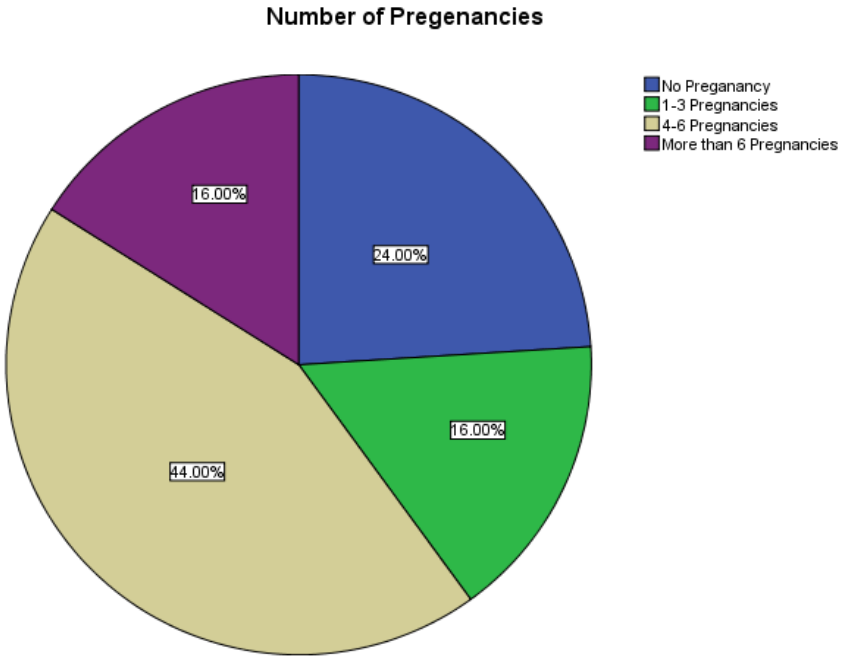

Figure (4-5) shows number of pregnancy

Table (4-6) shows the distribution of the patients according to the number of abortions. as shown in the below figure.

number of abortions	Frequency	Percent	Percent	Cumulative Percent
Didn't Become Pregnant	9	18.0	18.0	18.0
Didn't Abort	17	34.0	34.0	52.0
1 or more Abortions	24	48.0	48.0	100.0
Total	50	100.0	100.0	

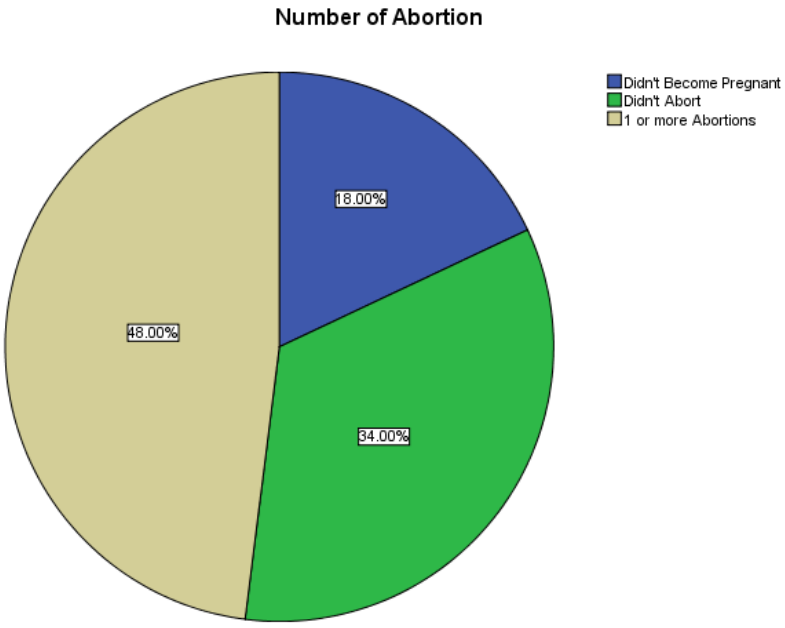

Figure (4-6) shows number of abortions

Table (4-7) shows the distribution of the patients according to their lactation status, as shown the below figure.

lactation status	Frequency	Percent	Percent	Cumulative Percent
Lactating	37	74.0	74.0	74.0
Not Lactating	13	26.0	26.0	100.0
Total	50	100.0	100.0	

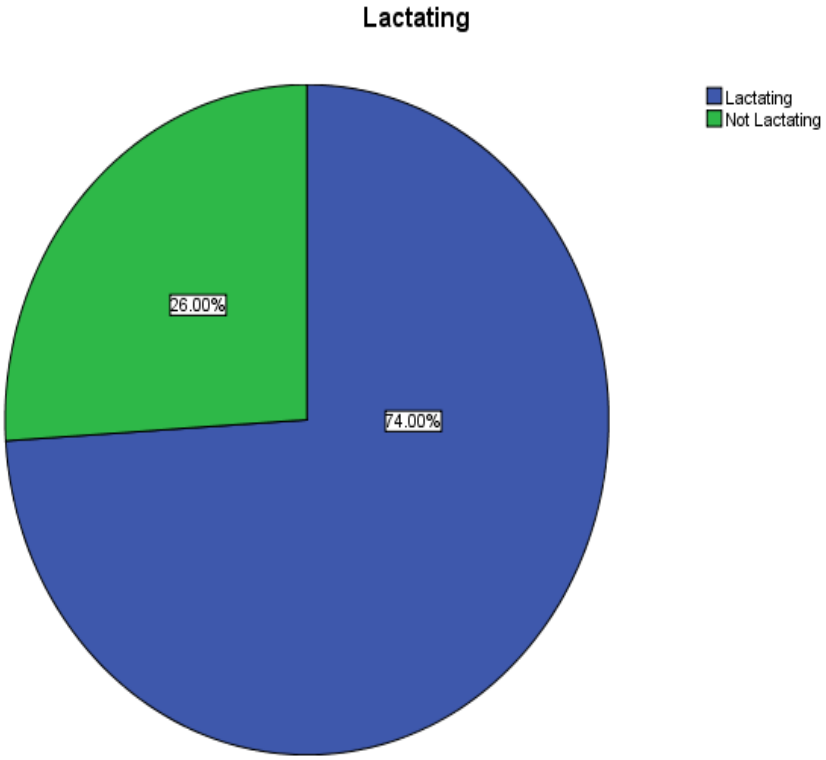

Figure (4-7) shows lactation status

Table:(4-8)shows the distribution of the patients according to socioeconomic status, as shown in the below figure.

socioeconomic status	Frequency	Percent	Percent	Cumulative Percent
Low	19	38.0	38.0	38.0
Moderate	25	50.0	50.0	88.0
High	6	12.0	12.0	100.0
Total	50	100.0	100.0	

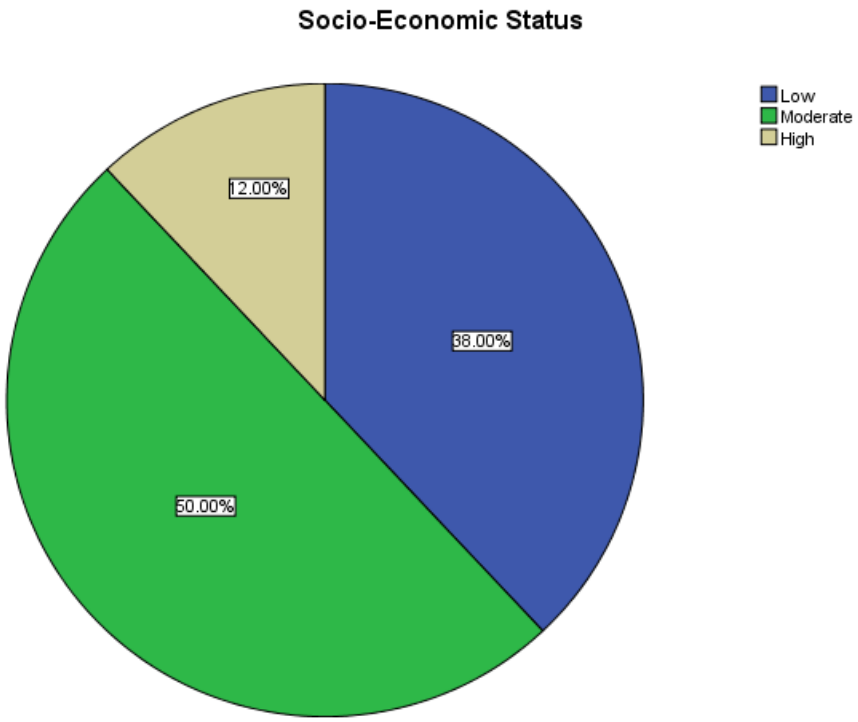

Figure (4-8) shows socioeconomic status

Table (4-9): shows the distribution of the patients according to whether there are similar case in the history of their families, as shown in the below figure.

Family history	Frequency	Percent	Percent	Cumulative Percent
Yes	29	58.0	58.0	58.0
No	21	42.0	42.0	100.0
Total	50	100.0	100.0	

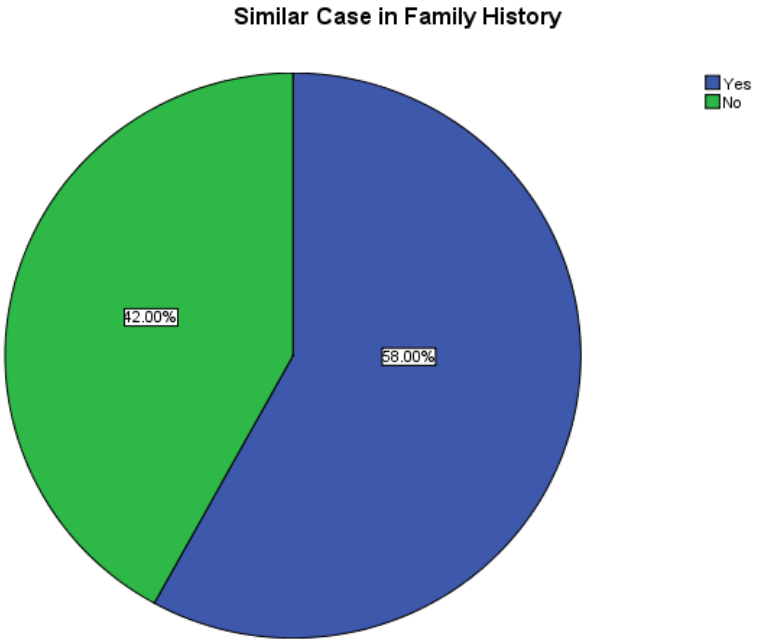

Figure (4-9) shows similar case in the history of their families

Table (4-10) presents the distribution supra pubic pain in the diagnosed patients, as shown in the below figure.

supra pubic pain	Frequency	Percent	Percent	Cumulative Percent
Yes	19	38.0	38.0	38.0
No	31	62.0	62.0	100.0
Total	50	100.0	100.0	

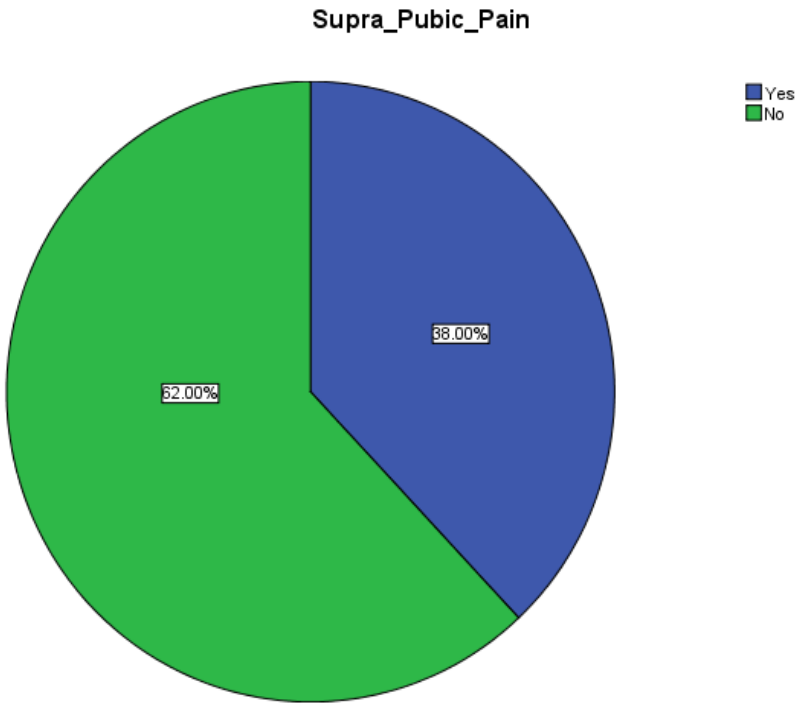

Figure (4-10) shows the distribution of supra pubic pain

Table (4-11) presents the distribution of Iliac fossa pain in the diagnosed patients, as shown in the below figure.

Iliac fossa pain	Frequency	Percent	Percent	Cumulative Percent
Yes	18	36.0	36.0	36.0
No	32	64.0	64.0	100.0
Total	50	100.0	100.0	

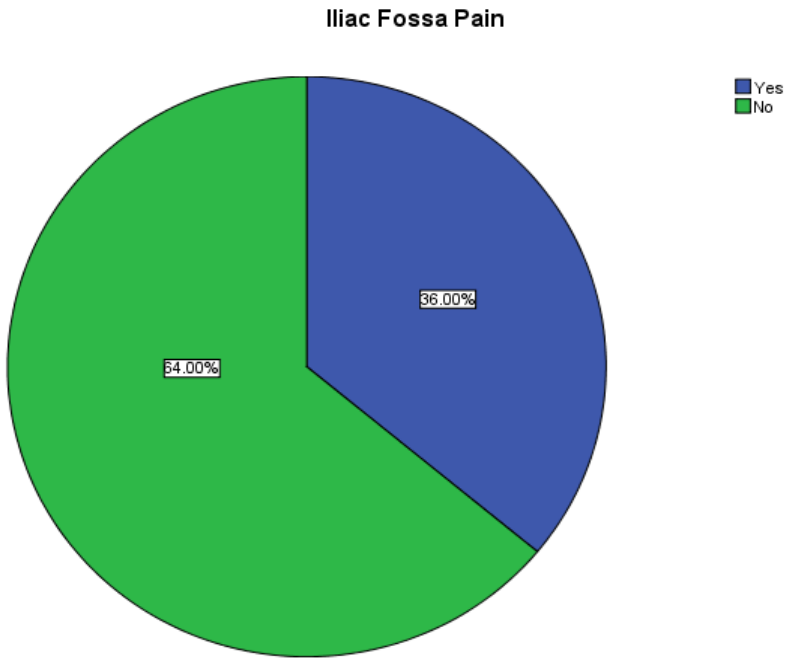

Figure (4-11) shows the distribution of Iliac fossa pain

Table (4-12) presents the distribution of vaginal discharg in the diagnosed patients, as shown in the below figure.

vaginal discharg	Frequency	Percent	Percent	Cumulative Percent
Yes	35	70.0	70.0	70.0
No	15	30.0	30.0	100.0
Total	50	100.0	100.0	

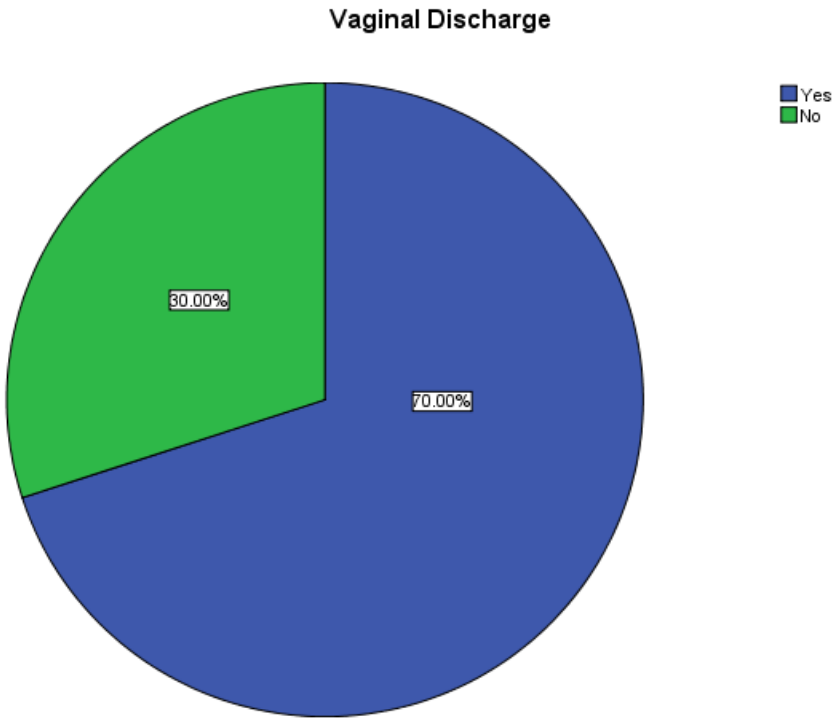

Figure (4-12) shows the distribution of vaginal discharg

Table (4-13) presents the distribution of the back pain existence in the diagnosed patients, as shown in the below figure.

back pain	Frequency	Percent	Percent	Cumulative Percent
Yes	34	68.0	68.0	68.0
No	16	32.0	32.0	100.0
Total	50	100.0	100.0	

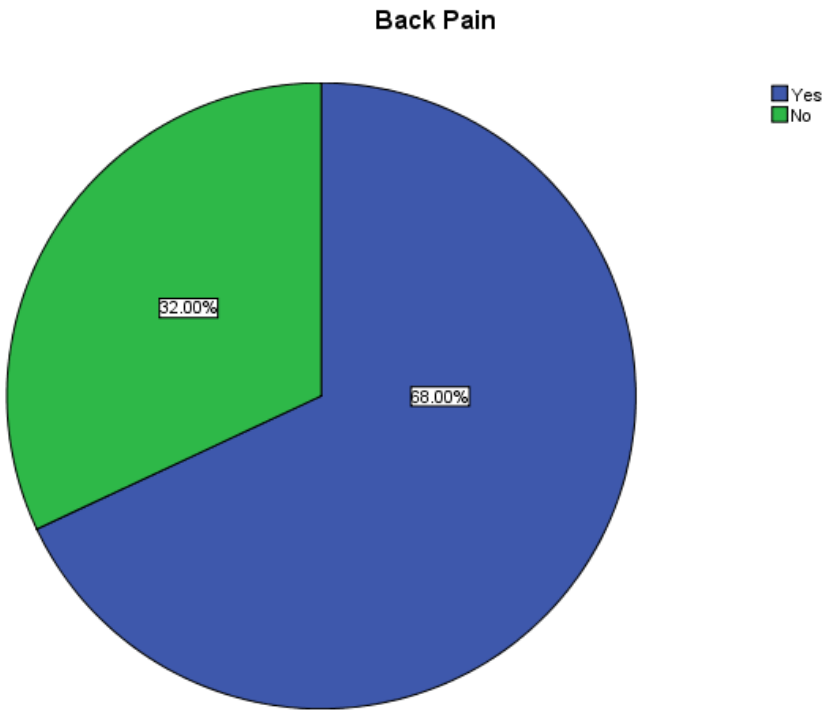

Figure (4-13) shows the distribution of back pain

Table (4-14) presents the distribution of pelvic swelling symptom in the diagnosed patients, as shown in the below figure.

pelvic swelling	Frequency	Percent	Percent	Cumulative Percent
Yes	22	44.0	44.0	44.0
No	28	56.0	56.0	100.0
Total	50	100.0	100.0	

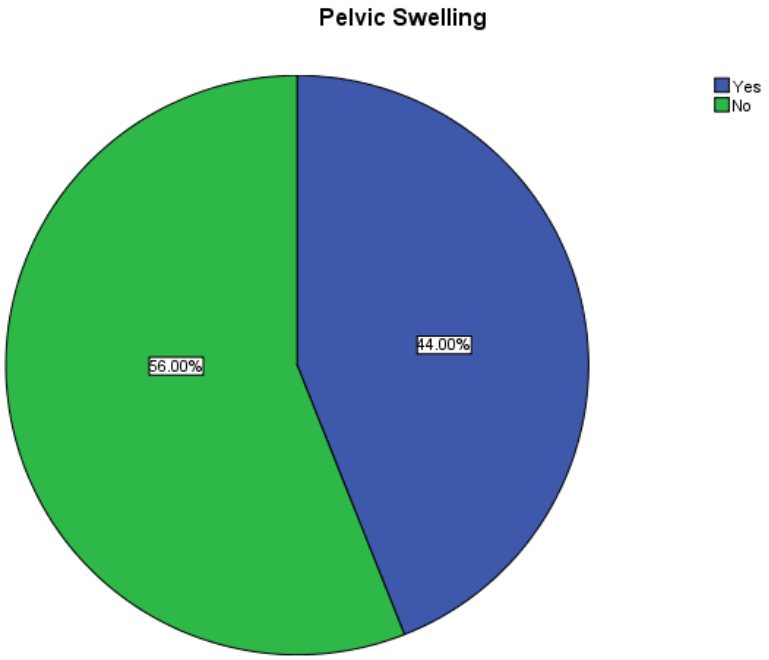

Figure (4-14) shows the distribution of pelvic swelling

Table (4-15) presents the distribution of uterine texture in the diagnosed patients as shown in the below figure.

uterine texture	Frequency	Percent	Percent	Cumulative Percent
Normal	33	66.0	66.0	66.0
Abnormal	17	34.0	34.0	100.0
Total	50	100.0	100.0	

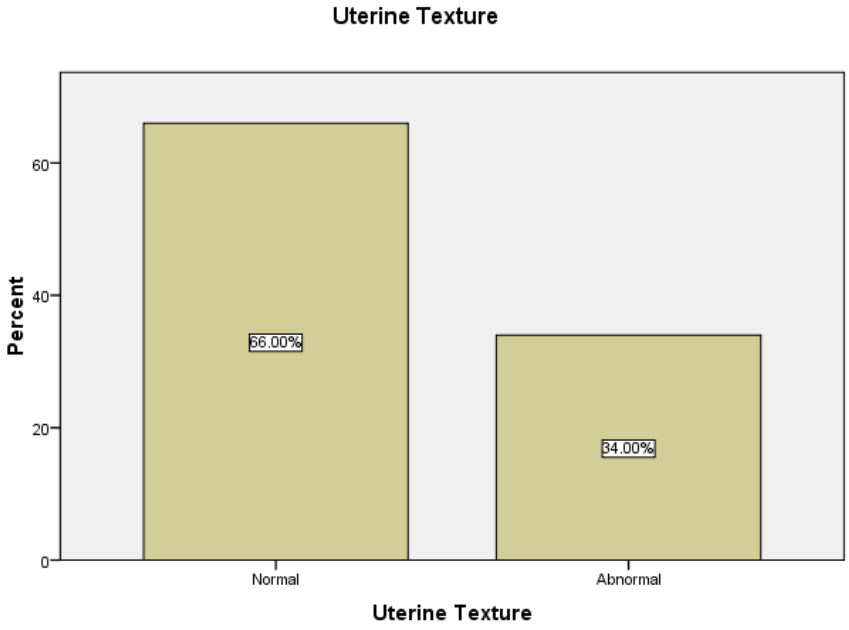

Figure (4-15) shows the distribution of uterine texture

Table (4-16) presents the distribution of endometrial thickness in the diagnosed patients, as shown in the below figure.

endometrial thickness	Frequency	Percent	Cumulative Percent
Normal	17	34.0	34.0
Abnormal	33	66.0	100.0
Total	50	100.0	

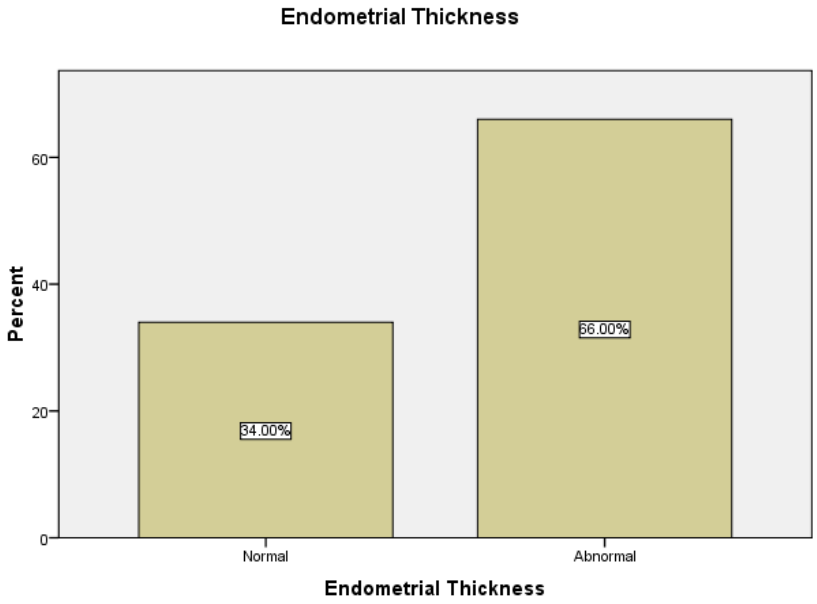

Figure (4-16) shows the distribution of endometrial thickness

Table (4-17) presents the distribution of fluid presence in the Cul de sac in the diagnosed patients, as shown in the below figure.

fluid presence in the Cul de sac	Frequency	Percent	Cumulative Percent
Present	7	14.0	14.0
Not Present	43	86.0	100.0
Total	50	100.0	

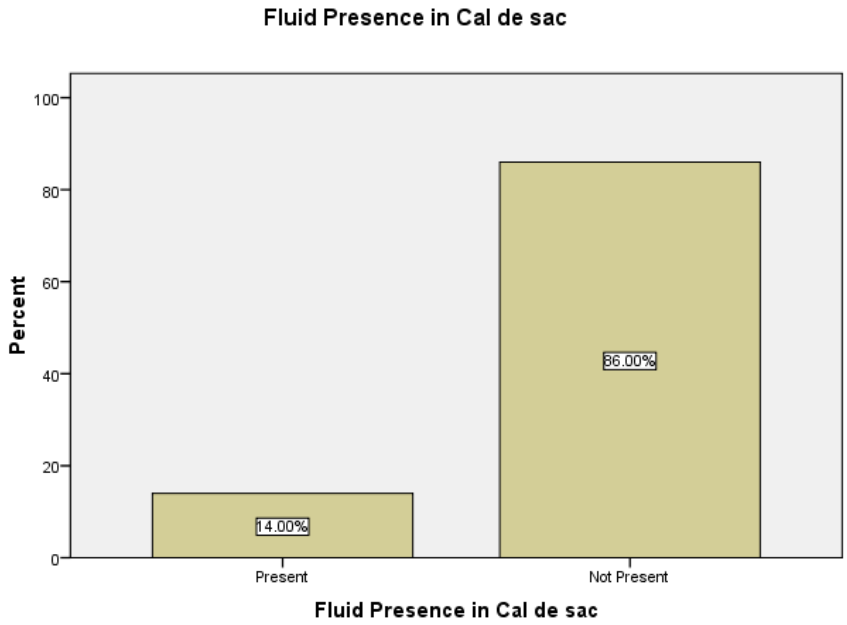

Figure (4-17) shows the distribution of fluid presence in the Cul de sac

Table (4-18) presents the distribution of Adnexiae mass presence in the diagnosed patients, as shown in the below figure.

Adnexiae mass	Frequency	Percent	Cumulative Percent
Present	5	10.0	10.0
Not Present	45	90.0	100.0
Total	50	100.0	

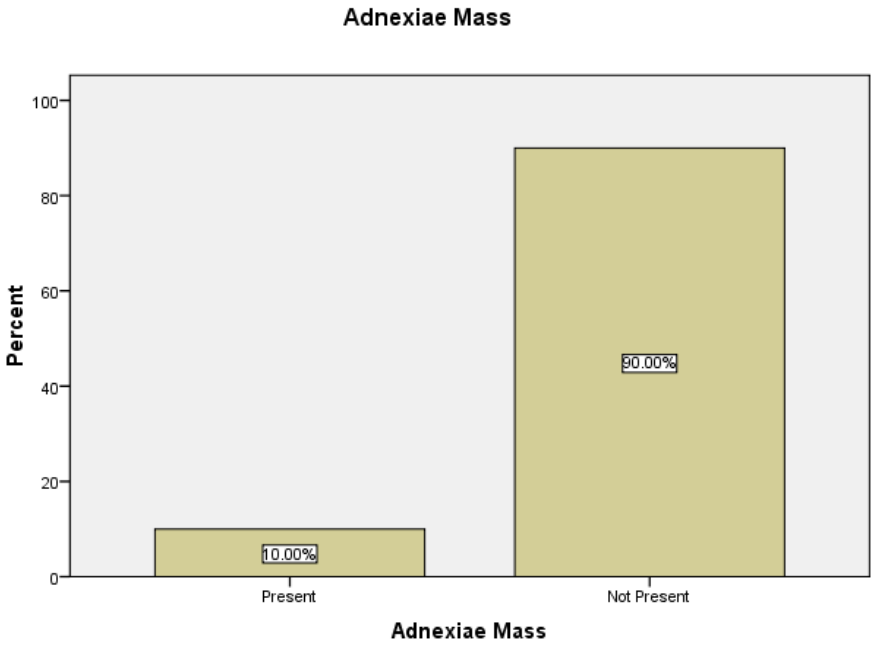

Figure (4-18) shows the distribution of Adnexiae mass

Table (4-19) shows Cross tabulation between the mass texture and the pathology.

pathology		Heterogeneous	Homogeneous	total
Final Diagnosis	Endometrial carcinoma	9	0	9
	Uterine Fibroid	0	17	17
	Uterine Carcinoma	5	0	5
	Cervical Carcinoma	4	0	4
Total		18	17	35

Table(4-20) shows Cross tabulation between Number of Abortion *socioeconomic status

Number of Abortion			Socio-Economic Status			Total
			Low	Moderate	High	
Number of Abortion	Didn't Become Pregnant	Count	3	6	0	9
		% within Number of Abortion	33.3%	66.7%	.0%	100.0%
		% within Socio-Economic Status	15.8%	24.0%	.0%	18.0%
	Didn't Abort	Count	6	8	3	17
		% within Number of Abortion	35.3%	47.1%	17.6%	100.0%
		% within Socio-Economic Status	31.6%	32.0%	50.0%	34.0%
	1 or more Abortions	Count	10	11	3	24
		% within Number of Abortion	41.7%	45.8%	12.5%	100.0%
		% within Socio-Economic Status	52.6%	44.0%	50.0%	48.0%
Total		Count	19	25	6	50
		% within Number of Abortion	38.0%	50.0%	12.0%	100.0%
		% within Socio-Economic Status	100.0%	100.0%	100.0%	100.0%

Table(4-21**):** shows Cross tabulation between Final Diagnosis * Uterine Texture

Final Diagnosis			Uterine Texture		
			Normal	Abnormal	Total
Final Diagnosis	Endometrial Hyper Plasia	Count	14	1	15
		% within Final Diagnosis	93.3%	.6.7%	100.0%
		% within Uterine Texture	42.4%	.5.9%	30.0%
	Uterine Fibroid	Count	17	0	17
		% within Final Diagnosis	100.0%	0%	100.0%
		% within Uterine Texture	51.%	0.0%	34.0%
	Endometrial Carcinoma	Count	1	8	9
		% within Final Diagnosis	11.1%	88.9%	100.0%
		% within Uterine Texture	3.0%	47.1%	18.0%
	Uterine Carcinoma	Count	0	5	5
		% within Final Diagnosis	.0%	100.0%	100.0%
		% within Uterine Texture	.0%	29.4%	10.0%
	Cervical Carcinoma	Count	1	3	4
		% within Final Diagnosis	25.0%	75.0%	100.0%
		% within Uterine Texture	3.0%	17.6%	8.0%
Total		Count	33	17	50
		% within Final Diagnosis	66.0%	34.0%	100.0%
		% within Uterine Texture	100.0%	100.0%	100.0%

Table(4-22) shows Cross tabulation between the age of menopause * uterine texture

Age of menopause	Uterine Texture		Total	Percentage
	Normal	Abnormal		
40-42 y	20	10	30	60%
43-45 y	13	7	20	40%
total	33	17	50	100%

Table (4-23) shows Cross tabulation between the age of menopause *endometrial thickness.

Age of menopause	Endometrial Thickness		Total	Percentage
	Normal	Abnormal		
40-42 y	14	16	30	56%
43-45 y	3	17	20	44%
total	17	33	50	100%

CHAPTER FIVE

Discussion, conclusion and recommendation

5.1-Discussion;

This study had been conducted in Khartoum state hospitals, to evaluate postmenopausal vaginal bleeding using trans abdominal ultrasonography, there were 50 cases in this study, all cases were suffering from vaginal bleeding and their age ranged between 40-70 years old , trans abdominal scanning was done to measure the uterine size, uterine texture, endometrial thickness and presence of masses and characteristics of it if present.

In table (4.1) which shows age distribution, there were 5 patient out of 50 cases under study have age between 40-49 (10%), 31 patients out of 50 cases under study have age between 50-59(62%), and the rest 14 patients out of 50 cases under study have age between 60-69 (28%) . that indicates post menopausal vaginal bleeding usually increasing with age, Similar results achieved by(Jane Bates 2010) .

Table(4-2) which shows fertility, there were 39 patients (78%) out of 50 were fertile women , while 11 patients (22%) out of 50 cases were infertile women , this might indicates that there was a relation between fertility and post menopausal vaginal bleeding, this may be due to effect of pregnancy hormones and stretch of the uterine wall. Similar results achieved by (Jane Bates 2010).

Concerning table (4-3) there were 5 cases(10%) out of 50 cases whose menopause started at age 40 , followed by 4cases(8%) out of 50 cases whose their menopause started at age 41, followed by 19 cases(38%) out of 50 cases whose their menopause started at age 42 , followed by 12 cases(24%) out of 50 cases whose their menopause started at age 43, followed by 8 cases(16%) out of 50 cases whose their menopause started at age 44, the rest 2 cases(4%) out of 50 cases whose their menopause started at age 45 , this might indicates that there is a relation between the menopause age and post menopausal vaginal bleeding it increased when the menopause age more than 40 years, Similar results achieved by(Jane Bates 2010).

Table (4-4) shows the distribution of patients according to age when the post menopausal vaginal bleeding started, and there were 23 cases (46%)out

of 50 and 17 cases (34%)out of 50 cases their menopause vaginal bleeding started when they were in the range (50-54) years and (55-59) years respectively , While those whose their menopause began while they were in the age classes (45-49) and (above 60) years was 10 cases (20%)out of 50 cases for each , this might indicates that the post menopausal vaginal bleeding usually started in the fifth decade , Similar results achieved by(Jane Bates 2010).

Table(4-5) shows the distribution of the patients according to the number of pregnancy, and it indicates that the majority of the cases 24(44%) out of 50 cases got pregnant 4-6 times, 12 cases (24%) out of 50 cases never did get pregnant, and 16 cases (32%) out of 50 cases those who got pregnant 1-3 times, and more than 6 times, this indicates that the post menopausal vaginal bleeding increased in patients with increase number of pregnancy this may be due to uterine weakness which occur with multiple pregnancies. Similar results were achieved by (Al fred abohamed 2014).

Table (4-6) shows the distribution of the patients according to the number of abortions, there were 24 cases (48%) out of 50 cases did aborted 1 or more times, and 17 cases (34%) out of 50 cases never aborted, and 9 cases (18%)out of 50 cases have never become pregnant to abort, this indicates that the post menopausal vaginal bleeding increased with increase number of abortions, Similar results were achieved by (Warwich carter 2012).

Table (4-7) shows distribution of the patients according to their lactation status, there were 37 cases (74%)out of 50 cases they were lactating, and 13cases (26%)out of 50 cases of them were not, this indicates that the post menopausal vaginal bleeding increased in lactating patients more than non lactating , this may be due to the effect of prolactine hormone on the ovaries and uterus. Similar results were achieved by (Warwich carter 2012).

Table (4-8) shows the distribution of the patients according to socioeconomic status, there were 25 cases(50%) out of 50 cases under study were a moderate socioeconomic , followed by 19 cases (38%) out of 50 cases under study were a low socioeconomic status , the rest 6 cases(12%) out of 50 cases under study were a high socioeconomic status, this indicates that the post menopausal vaginal bleeding increased in moderate and low socioeconomic status more than high socioeconomic

status, this is most probably due to their life style and habits. Similar results were achieved by (Jane Bates 2010).

Table (4-9) shows the distribution of the patients according to whether there are similar case in the history of their families, there were 29 cases (58%)out of 50 cases have similar cases in their families' history, and 21 cases (42%)out of 50 cases do not have such a case, this indicates that the post menopausal vaginal bleeding increased in patients with **family history** of similar cases, this may be due to inherited genetic . Similar results were achieved by(Jane Bates 2010).

Concerning table (4-10) presents the distribution Supra pubic pain in the diagnosed patients, there were 31cases (62%)out of 50 cases of them do not suffer from supra pubic pain, while 19 cases (38%)out of 50 cases of them are suffering from supra pubic pain, this indicates that the post menopausal vaginal bleeding not usually associated with Supra pubic pain in this study, agonist results were achieved by (Jane Bates 2010) .

Table (4-11) presents the distribution of iliac fossa pain in the diagnosed patients, there were 32 cases (64%)out of 50 cases of them not suffer from iliac fossa pain, while 18 cases (36%)out of 50 cases of them are suffering from that pain, this indicates that the post menopausal vaginal bleeding not usually associated with iliac fossa pain in this study, Similar results were achieved by(Jane Bates 2010).

Table (4-12) presents the distribution of vaginal discharge in the diagnosed patients, and it indicates that the majority of them 35 cases (70%) out of 50 cases have vaginal discharge, while 15 cases (30%) out of 50 cases do not have, this indicates that the post menopausal vaginal bleeding usually associated with vaginal discharge . Similar results were achieved by (Jane Bates 2010).

Table (4-13) presents the distribution of the back pain existence in the diagnosed patients, there were 34 cases (68%) out of 50 cases of them do suffer from back pain, while 16 cases (32%) out of 50 cases of them do not have any back pain symptoms, this indicates that the post menopausal vaginal bleeding in this study usually associated with back pain . Similar results were achieved by (Jane Bates 2010).

Table (4-14) presents the distribution of pelvic swelling in the diagnosed patients, and it indicates that 28 cases (56%) out of 50 cases of them do not have pelvic swelling symptom , while 22 cases (44%) out of 50 cases do have that symptom this indicates that the post menopausal vaginal bleeding not usually associated with pelvic swelling in this study , agonist results were achieved by (Jane Bates 2010).

Table (4-15) presents the distribution of uterine texture in the diagnosed patients, and it indicates that 33 cases (66%) out of 50 cases do have normal texture, while 17 cases (34%) out of 50 cases of them their uterine texture is abnormal, this indicates that the uterine texture in the majority of patients in this study was normal this may be due to the majority of patients have benign disease and early stage of malignancy . agonist results were achieved by (Al fred abohamed 2014).

Table (4-16) presents the distribution of endometrial thickness in the diagnosed patients, there were 33 cases (66%) out of 50 cases do have abnormal endometrial thickness, while 17 cases (34%) out of 50 cases do have normal endometrial thickness , this indicates that the post menopausal vaginal bleeding usually associated with endometrial thickness . Similar results were achieved by (Al fred abohamed 2014).

Table (4-17) presents the distribution of fluid presence in the Cal de sac in the diagnosed patients, there were 43 (86%) out of 50 cases of the diagnosed cases fluid in Cal de sac does not present, while in 7 cases (14%) out of 50 cases of them it does, this indicates that the post menopausal vaginal bleeding in this study not usually associated with fluid in the Cal de sac this may be due to all the cases in this study on treatment therapy and the majority of cases do not have active bleeding at time of scan . agonist results were achieved by (Al fred abohamed 2014).

Table (4-18) presents the distribution of adnexiae mass presence in the diagnosed patients, and it indicates that in the majority of the diagnosed cases 45(90%) out of 50 cases of them adnexiae mass does not present, and it is present in only 5 (10%) out of 50 cases of them, this indicates that the post menopausal vaginal bleeding in this study not usually associated with an adnexiae mass . Similar results were achieved by(Jane Bates 2010).

Table(4-19) shows the relation between the mass texture and the pathology, and it indicates that in the majority of the diagnosed patients 17(48%) out of 50 cases diagnosed as uterine fibroid with Homogeneous texture ,followed by 9 cases(26%)out of 50 cases diagnosed as Endometrial carcinoma with Heterogeneous texture , followed by 5cases(14%) out of 50 cases diagnosed as Uterine Carcinoma with Heterogeneous texture , the rest 4 cases(12%) out of 50 cases diagnosed as Cervical Carcinoma with Heterogeneous texture, this indicates that the most common case of post menopausal vaginal bleeding in this study is uterine fibroid , an it indicates that the texture of the benign pathology is Homogeneous texture while the texture of the malignant pathology is Heterogeneous texture. Similar results were achieved by (Jane Bates 2010).

Table(4-20) shows the relation between the number of abortion and socioeconomic status, there were 24 cases (48%) out of 50 cases get 1 0r more abortions, 10 of them (41.7%) are low Socio-economic Status, 11 of them (45.8%) are moderate Socio-economic Status and 3 of them (12.5%) are high Socio-economic Status , followed by 17 cases (34%) out of 50 cases didn't abort, 6 of them (35.3%) are low Socio economic Status , 8 of them (47.1%) are moderate Socio-economic Status and 3 of them (17.6) are high Socio-economic Status, followed by 9 cases(18%) out of 50 cases didn't become Pregnant 3 of them (33.3%) are low Socio-economic Status , 6 of them (66.7 %) are moderate Socioeconomic Status, this indicates that the post menopausal vaginal bleeding increased in patients with increased the number of abortions and also indicates that the number of abortions increased in moderate and low socioeconomic status more than high socioeconomic status. Similar results were achieved by (Jane Bates 2010).

Table(4-21) shows the relation between the final diagnosis and uterine texture and it indicates that the majority of the diagnosed patients 17 of them (34%) out of 50 cases have Uterine fibroid with normal uterine texture for the 17 cases . Followed by 15 cases (30%) out of 50 cases have endometrial hyper plasia 14 of them with normal uterine texture and 1 of them with abnormal uterine texture , followed by 9cases (18%) out of 50 cases have endometrial Carcinoma 8 of them with abnormal uterine texture and 1 of them with normal uterine texture , followed by 5 cases (10%) out of 50 cases have Uterine Carcinoma all of them with abnormal uterine texture , the least diagnosis in this study is Cervical Carcinoma 4 cases(8%)

3 of them with abnormal uterine texture and 1 of them with normal uterine texture , this indicates that the most common case of post menopausal vaginal bleeding in this study is uterine fibroid an it indicates that the uterine texture with benign pathology is normal while the texture with malignant pathology is abnormal te xture. Similar results were achieved by (Jane Bates 2010).

Table(4-22) shows the relation between the age of menopause and uterine texture and indicates that the majority of the diagnosed patients 30 (60%) out of 50 cases start their menopause at age from (40-42 y) 20 of them(67%) with normal uterine texture and 10 of them(33%) with abnormal, The rest 20 patients with percentage of (40%) out of 50 cases they start their menopause at age from (43-45 y) 13 of them(65%) with normal uterine texture and 7 of them(35%) with abnormal uterine texture. it indicates that the percent of abnormal uterine texture increased in patients with increase the age of menopause . Similar results were achieved by (Warwich carter 2012) .

Table(4-23) shows the relation between the age of menopause and the endometrial thickness, and it indicates that the majority of the diagnosed patients 30 of them (60%) out of 50 cases start their menopause at age from (40-42 y) 16 of them(53%) with ab normal endometrial thickness and 14 of them(47%) with normal endometrial thickness , the rest 20 cases (40%) out of 50 cases they start their menopause at age from (43-45 y) 3 of them(15%) with normal endometrial thickness and 17 of them(85%) with abnormal endometrial thickness , this indicates that the percent of abnormal endometrial thickness increased in patients with increase the age of menopause . Similar results were achieved by (Warwich carter 2012).

5.2-Conclusion;

This study was proved its hypothesis that; U/S scanning is a good diagnostic tool for diagnosis of post menopausal vaginal bleeding. Post menopausal vaginal bleeding increased with fertility, increasing pregnancies and with increase number of abortions.

Post menopausal vaginal bleeding also increased in moderate and low socioeconomic status more than high socioeconomic status.

Post menopausal vaginal bleeding increased in patients with family history of similar cases more than patients without family history of similar cases.

post menopausal vaginal bleeding usually associated with vaginal discharge and back pain, and not usually associated with fluid in the Cul de sac and adnexiae mass .

This study found that the abnormal endometrial thickness increased in patients with increase the age of menopause .

Ultrasound findings which are associated with post menopausal vaginal bleeding include , endometrial thickness, the texture of the benign pathology is homogeneous texture while the texture of the malignant pathology is heterogeneous texture and the uterine texture with benign pathology is normal while the texture with malignant pathology is abnormal .

5-3 Recommendation:

Elder women (40 years or greater) should be educated about post menopausal vaginal bleeding for early complain to health centers for early diagnoses and treatment.

- Study recommended that the government should introduce new ultrasound machines and increase the training institutes of ultrasound for increasing the sonologists skills and experiences.
- The study recommended that the government should be increase the specialist hospitals for gynecology diseases because they increased in Sudanese woman s now a days.
- The histopathology is not usually available, and it is very expensive. According to its high values in diagnoses of post menopausal vaginal bleeding , study advised the ministry of health and private laboratories to indorsing it, until it is becomes available to any patient.
- According to the high cost of scientific research which the researcher was faced, the government should appeal universities in Sudan and companies to support the researchers in order to improve plans of treating and management of such diseases.
- Further studies should be carried out in this field on many aspects such as increasing the number of patients to show the relation between the post menopausal vaginal bleeding and other clinical symptoms and ultrasound finding .

5-4 References:-

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Appendix 1

Data collection sheet .

Personal history :

Patient age:- ( ) year .

Marital status : - mared ( ) – single ( ).

Fertilety :- fertile ( ) – un fertile ( ) .

Age of menark:- ( ) year.

Age of menopause :- ( ) year.

Age of starting of post menopausal vaginal bleeding :- ( ).

No of pregnancies :- ( ) .

No of abortios :- ( ).

Lactation :- lactating ( ) – not lactating ( ).

Socio economic status :- low ( ) – moderate ( ) – high ( ) .

Family history of similar condition:- yes ( ) – no ( ) .

Clinical information :

Supra pupic pain:- yes ( ) – no ( ).

Iliac fossa pain:- yes ( ) – no ( ) .

Vaginal discharge :- yes ( ) – no ( ) .

Back pain :- yes ( ) – no ( ) .

Pelvic swelling :- yes ( ) no ( ) .

Vaginal bleeding :- yes ( ) no ( ) .

Ultra sond finging :

Uterine size :- lenth ( ) – wedth ( ) – antero posterior diameter ( ) .

Uterine texter :- normal ( ) – ubnormal ( ) .

Uterine mass:- yes ( ) – no ( ) .

Mass outlines :- regular ( )- irregul

Mass texture :- homogenius ( )- hetrogenius ( ).

Size of mass:- length ( )- wedth ( ).

Endometrial thickness:- ( ) mm.

Present of fluid in call de sac :- yes ( ) – no ( ).

Adnexiae mass:- present ( ) – not present .

Final diagnoses:- ( ).

Appendix 2

Image (1) transe abdominal u/s for 45 y women with endometrial hyper plasia

Image (2) transe abdominal u/s for 46 y women with endometrial hyper plasia

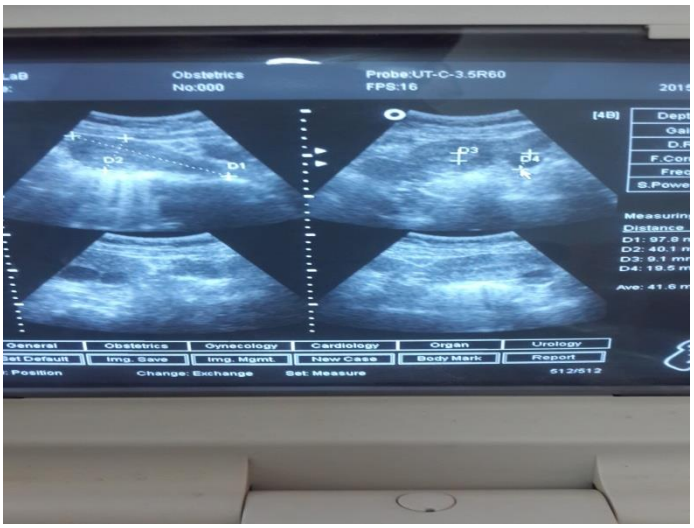

Image (3) Transe abdominal u/s for 43y women show endometrial hyper plasia with cysti mass in the right adnexiae .

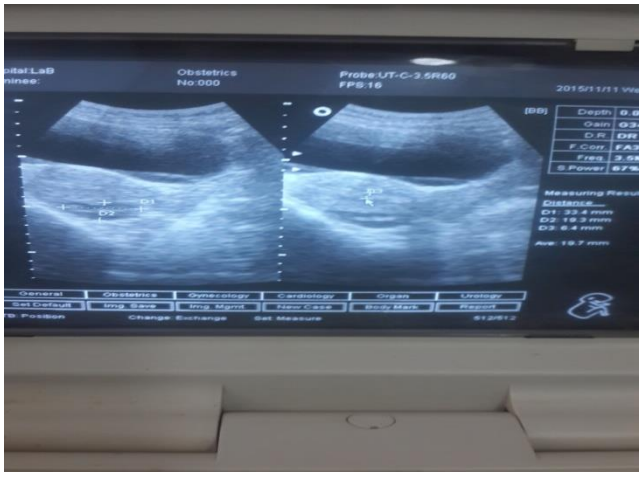

Image (4) transe abdominal u/s for 46 y women with endometrial hyper plasia with fluid in cul de sac.

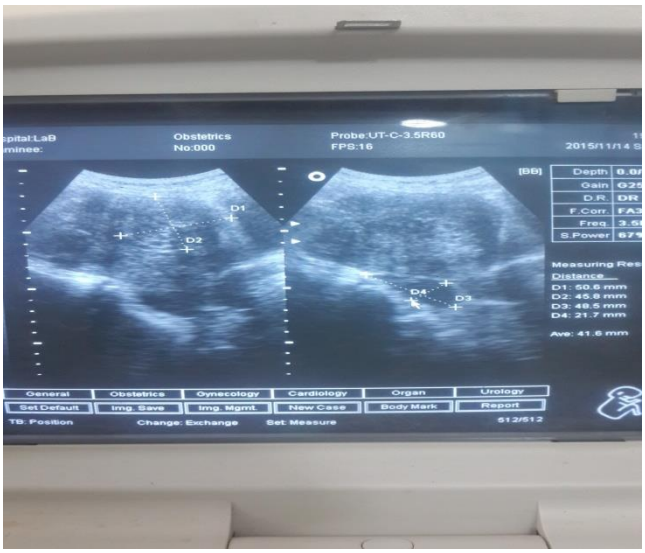

Image (5) transe abdominal u/s show 56 y women with uterine carcinoma .

Image (6) transe abdominal u/s for 57 y women with uterine carcinoma and fluid in cul de sac.

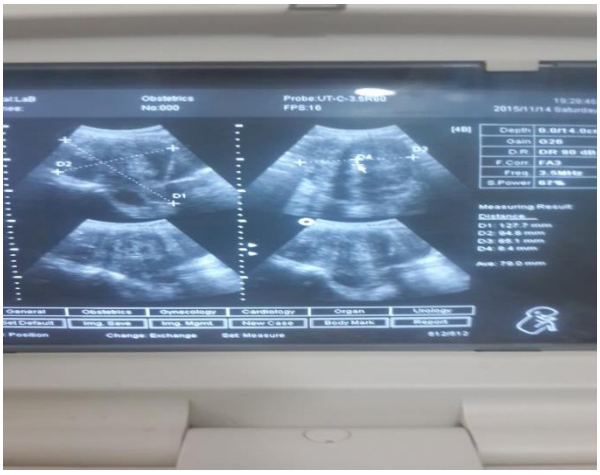

Image (7) transe abdominal u/s for 54 y women with uterine carcinoma with endometrial hyper plasia and fluid in cal de sac.

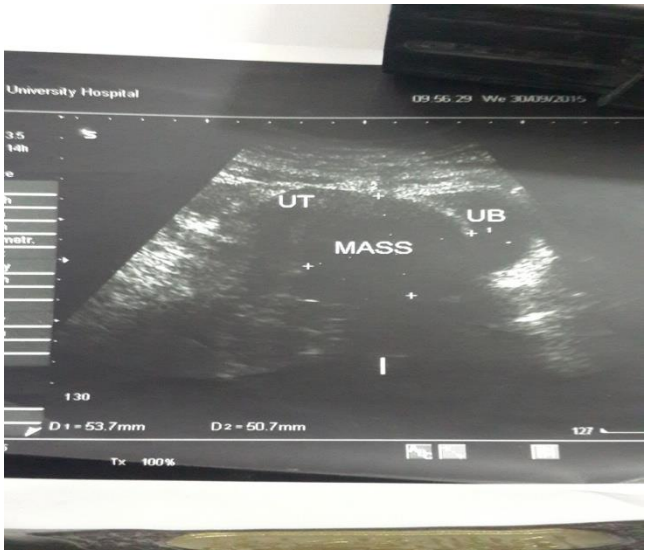

Image (8) transe abdominal u/s for 57 y women with uterine carcinoma .

Image (9) transe abdominal u/s for 59 y women with cervical carcinoma.

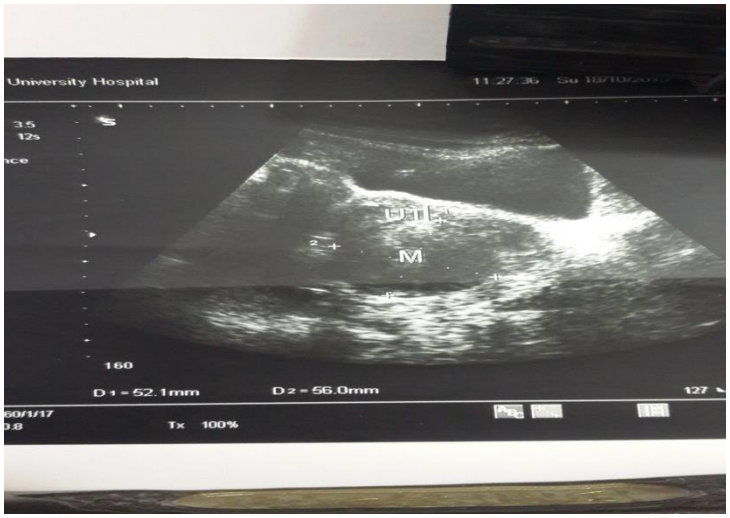

Image (10) transe abdominal u/s for 59 y women with cervical carcinoma.

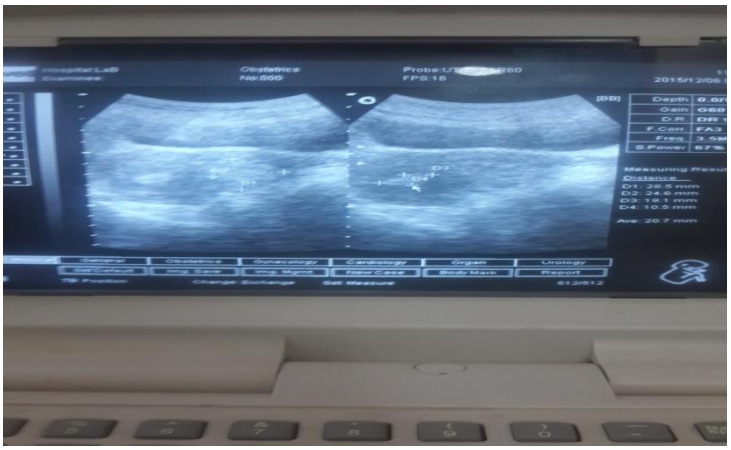

Image (11) transe abdominal u/s for 45 y women with uterine fibroid

Image (12) transe abdominal u/s for 44 y women with calcified uterine fibroid and fluid in cul de sac

Image (13) transe abdominal u/s for 43 y women with uterine fibroid.

Image (14) transe abdominal u/s for 46 y women with calcified uterine fibroid and fluid in cul de sac.