Section: Radiodiagnosis

Original Research Article

PREVALENCE OF GYNAECOLOGICAL MORBIDITY IN FEMALES OF ASYMPTOMATIC AGE GROUP USING PELVIC ULTRASOUND IMAGING

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ABSTRACT

Background: Gynecological morbidity in reproductive age is a global concern affecting females including in India contributed by gynecological anomalies. Ultrasound is reliable in detecting gynecological morbidity utilizing non-invasive and painless methods for detection. **Aim:** The present study aimed to assess the prevalence of gynecological morbidity in asymptomatic females of the reproductive age group using pelvic ultrasound imaging in India.

Materials and Methods: The present study assessed 1896 female subjects who were screened within the defined study period. In all the asymptomatic females, ultrasonographic assessment was done to look for any gynecological morbidity. The data gathered were tabulated and analyzed for results formulation.

Results: Findings on USG pelvis in asymptomatic study females were seen in 172 subjects and the most common finding was antenatal status seen in 56 subjects followed by multiple uterine fibroids in 42 subjects, intrauterine contraceptive device in 24 subjects, postmenopausal status in 22 subjects, single uterine fibroids, and right/left ovarian cystic mass in 8 subjects each, endometriosis in 6 subjects, endometrial polyp in 4 subjects, and retained products of conceptions in 2 subjects respectively

Conclusions: The present study concludes that gynecological concerns in reproductive age group females can be asymptomatic and undiagnosed. Pelvic ultrasound assessment is a rapid, non-invasive, and painless modality that can be done at all healthcare levels with a 2D ultrasound machine and access to a radiologist for interpretation of the image.

Keywords: Cyst, fibroids, pelvic ultrasound, ultrasound, screening.

INTRODUCTION

Gynecological morbidity in females from reproductive age group is defined as any condition, disease, or dysfunction of the reproductive system that is not related to pregnancy, abortion, or childbirth. The common gynecological symptoms include chronic pelvic pain, non-menstrual spotting or bleeding, inguinal swelling, itching of the vulva, burning urination, white vaginal discharge, and irregular menstruation.[1]

In females from the reproductive age range, polycystic ovary syndrome, adnexal masses, and masses of the reproductive tract are also seen. Gynecological concerns and diseases lead to a significant contribution to the overall global disease burden with approximately 4.5% contribution and it exceeds the major global disease prevalence including maternal conditions, ischemic heart disease, tuberculosis, and malaria.[2]

The diagnosis of commonly seen gynecological diseases, conditions, and morbidities is assessed clinically and is confirmed using radiographic techniques. Among various gynecological imaging techniques, one of the most commonly used techniques remains ultrasound. Ultrasound is a non-invasive and painless modality of imaging that can be used to detect gynecological abnormalities.[3,4] The present study aimed to assess the prevalence of gynecological morbidity in asymptomatic females of

the reproductive age group using pelvic ultrasound imaging in India.

MATERIALS AND METHODS

The present cross-sectional clinical study aimed to assess the prevalence of gynecological morbidity in asymptomatic females of reproductive age group using pelvic ultrasound imaging in India. The study was done at….from…..to….after the clearance was given by the concerned Institutional Ethical committee. The study subjects were from the Department of Radiodiagnosis of the Institute. Verbal and written informed consent were taken from all the subjects before participation.

The present study assessed females from the reproductive age group who visited the Outpatient Department of Obstetrics and Gynecology of the Institute within the defined study period. The subjects who had prior treatment or were undergoing any treatment from the gynecology department, asymptomatic females, and subjects who were not willing to participate in the study were excluded. The subjects were then asked to drink water and maintain the status of the bladder as full. In all the subjects, demographic data were gathered including age, name, and contact details. The history also noted any complaints, menstrual cycle, and any significant gynecological complaints were recorded.

Ultrasound examination of the pelvis was done in all the included subjects in a pleasant and dedicated room. A 3.5 to 5 MHz probe was used for per abdomen ultrasound. The lower abdomen of the subjects was scanned in transverse and sagittal planes by a radiologist experienced and expert in the field. The suprapubic area was scanned to see the ovaries and uterus. The pelvis and pouch of Douglas were also assessed for any additional findings.

The common interest in screening was postmenopausal status, conditions associated with post-hysterectomy status, endometrial polyp, endometriosis, intrauterine contraceptive device (IUCD), retained products of conception, ovarian cystic mass, and uterine fibroids. Uterine fibroids were taken as present if there were well-defined solid masses with a whorled appearance, usually of similar echogenicity to the myometrium, or hypoechoic in ultrasound examination. The uterus seen might show altered contour or bulky with cystic changes or posterior acoustic shadowing. Ultrasound might show follicular cysts as simple unilocular, anechoic cysts with a thin, smooth wall, without enhancing nodules or other solid components or enhancing septations, and no more than physiologic ascites. Ultrasound of the corpus luteal cyst depicts a small complex ovarian cyst with a vascular wall on power Doppler analysis.

The ring of fire was seen as a characteristic circular Doppler appearance. The cyst depicts good through transmission and no internal vascularity. A hemorrhagic ovarian cyst is seen as an unilocular thin-walled cyst with good through transmission and low-level echoes or fibrin strands. Endometrioma was seen on ultrasound as a variable, but the great majority of >95% of subjects present a classic hypoechoic and homogenous cyst with diffuse low-level echoes.

Polycystic ovary syndrome is usually seen as 10 or more peripheral simple cysts usually with a string of pearls appearance and ovaries are typically increased in size, however, in 30% of subjects ovaries show normal volume. On ultrasound, ovarian hyperstimulation syndrome usually presents bilateral ovarian enlargement with multiloculated cysts that can replace the ovary. Ovarian hyperstimulation syndrome is diagnosed by clinical history which is a distinguishing feature. Tubo-ovarian abscess depicts a thick-walled complex cystic ovarian lesion seen with high flow.

Malignant cystic lesions in the ovary usually show a very large multiloculated cystic lesion in the right adnexa region. The locules can have uniform low-level echoes which were consistent with proteinaceous content including mucin or hemorrhage. Septations are seen as thicker and partially caused by lower scan resolution at great depth. Septations might show vascularity with ascites and solid components.

Ultrasound is usually the first-line investigation in suspected cases of retained products of conception and depicts variable heterogeneous or echogenic material in the endometrial cavity. In a few cases, it may be seen as an intrauterine or endometrial mass. In cases with vascularity in echogenic material, it is supportive of the diagnosis, however, color Doppler flow absence has a low negative predictive value because retained products of conception may be avascular. Retained products of conception can be seen on ultrasound when endometrial thickness is>10mm after dilatation and curettage or spontaneous abortion with 80% sensitivity.

In cases with IUCD, a straight hyperechoic structure in the endometrial canal of the uterus and the arms of the IUCD extending laterally at the uterine fundus is seen. >4mm distance from the uterine fundus is usually linked with symptoms such as pain and bleeding along with a higher risk of expulsion or displacement, however, the majority of low IUCDs migrate to the fundus in a few months.

Endometrial polyps are usually seen as echogenic and solitary homogeneous lesions. It is rarely heterogenous or hypoechoic. Stalk to the polyp can either be broad-based or thin (pedunculated). It can be seen as isoechoic as a focal nonspecific thickened endometrium, without visualization of a discrete mass. Subjects with significant positive findings on ultrasound were sent to the gynecologist for further treatment. Subjects that were asymptomatic and with negative ultrasound screens were advised to visit if they have gynecological abnormalities symptoms in the future.

The data gathered were analyzed statistically using SPSS (Statistical Package for the Social Sciences)

software version 24.0 (IBM Corp., Armonk. NY, USA) for assessment of descriptive measures, Student t-test, ANOVA (analysis of variance), and Chi-square test. Pearson correlation coefficient was used to assess correlation in various parameters. The results were expressed as mean and standard deviation and frequency and percentages. The p-value of <0.05 was considered.

RESULTS

The present cross-sectional clinical study aimed to assess the prevalence of gynecological morbidity in asymptomatic females of reproductive age group using pelvic ultrasound imaging in India. The study assessed 1896 subjects who were screened within the defined study period. The most common clinical symptoms seen during screening were white discharge, vaginal itching, and menstrual irregularity seen in (n=34), (n=56), and n=46 study subjects respectively. Other complaints seen were stress incontinence and vaginal bleeding in 4 and 10 subjects respectively. In 20 subjects hysterectomy was done due to cervical cancer, endometrial carcinoma, obstetric complications, and uterine fibroids in 2, 2, 6, and 10 subjects respectively. The study excluded 170 subjects and they were sent for gynecological assessment. The remaining 1726 asymptomatic females were included and the majority of them were in the age range of 31-40 years with 802 subjects followed by 21-40 years with 702 subjects, 170 subjects in 41-50 years, 42 subjects in 51-60, 6 subjects in >60 years, and 4 subjects in 11-20 years respectively (Table 1).

On assessing the obstetrics and gynecological findings on USG pelvis in an asymptomatic study females were seen in 172 subjects and the most common finding was antenatal status seen in 56 subjects followed by multiple uterine fibroids in 42 subjects, intrauterine contraceptive device in 24 subjects, postmenopausal status in 22 subjects, single uterine fibroids, and right/left ovarian cystic mass in 8 subjects each, endometriosis in 6 subjects, endometrial polyp in 4 subjects, and retained products of conceptions in 2 subjects respectively (Table 2).

It was seen that no female in the study had abnormality from any inserted IUCD. Postmenopausal status was seen in 22 females with atrophied ovaries and small-sized uterus on ultrasonography assessment. Endometrial thickness seen was <4mm. Uterine fibroids were seen in 50 subjects and 44 of these 50 subjects reported no symptom. Females who had a diagnosis of uterine fibroids were referred to the Department of Gynecology. These subjects were managed with the pharmacological treatment and 40 out of these 50 subjects were under medical management for 6 months follow-up. Myomectomy was required in 4 females and 6 females underwent hysterectomy.

The results of the present study also showed that four females who had endometrial polyps were referred to the Department of Obstetrics and Gynecology of the Institute and underwent polyp resection for their polyps. Concerning the histopathological assessment, two specimens depicted an endometrial carcinoma in situ. These subjects were then referred to the higher center for oncologic and gynecological assessment and management.

Table 1: Distribution of study subjects based on age range

S. No	Age range (years)	Number (n)
1.	11-20	4
2.	21-30	702
3.	31-40	802
4.	41-50	170
5.	51-60	42
6.	>60	6
7.	Total	1726

Table 2: Obstetrics and gynecological findings on USG pelvis in asymptomatic study females

S. No	Diagnosis	Number (n)
1.	Postmenopausal status	22
2.	Endometrial polyp	4
3.	Endometriosis	6
4.	Intrauterine contraceptive device	24
5.	Retained products of conception	2
6.	Right/left ovarian cystic mass	8
7.	Multiple uterine fibroids	42
8.	Single uterine fibroid	8
9.	Antenatal status	56
10.	Total	172

DISCUSSION

The present study assessed 1896 subjects who were screened within the defined study period. The most common clinical symptom seen during screening were white discharge, vaginal itching, and menstrual irregularity seen in (n=34), (n=56), and n=46 study subjects respectively. Other complaints seen were stress incontinence and vaginal bleeding in 4 and 10 subjects respectively. In 20 subjects hysterectomy

was done due to cervical cancer, endometrial carcinoma, obstetric complications, and uterine fibroids in 2, 2, 6, and 10 subjects respectively. The study excluded 170 subjects and they were sent for gynecological assessment. The remaining 1726 asymptomatic females were included and the majority of them were in the age range of 31-40 years with 802 subjects followed by 21-40 years with 702 subjects, 170 subjects in 41-50 years, 42 subjects in 51-60, 6 subjects in >60 years, and 4 subjects in 11-20 years respectively. These findings were consistent with the previous studies of Hirani DG et al5 in 2020 and Lizneva D et al,[6] in 2016 where authors assessed subjects with similar demographic and disease data in their respective studies as in the present study.

The study results showed that on assessing the obstetrics and gynecological findings on USG pelvis in an asymptomatic study females were seen in 172 subjects and the most common finding was antenatal status seen in 56 subjects followed by multiple uterine fibroids in 42 subjects, intrauterine contraceptive device in 24 subjects, postmenopausal status in 22 subjects, single uterine fibroids, and right/left ovarian cystic mass in 8 subjects each, endometriosis in 6 subjects, endometrial polyp in 4 subjects, and retained products of conceptions in 2 subjects respectively. These results were in agreement with the findings of Biggs WS et al,[7] in 2016 and Rathod AD et al8 in 2016 where obstetrics and gynecological findings on USG pelvis in asymptomatic females similar to the present study were also reported by the authors in their respective studies.

It was also reported that no female in the study had abnormality from any inserted IUCD. Postmenopausal status was seen in 22 females with atrophied ovaries and small-sized uterus on ultrasonography assessment. Endometrial thickness seen was <4mm. Uterine fibroids were seen in 50 subjects and 44 of these 50 subjects reported no symptom. Females who had a diagnosis of uterine fibroids were referred to the Department of Gynecology. These subjects were managed with the pharmacological treatment and 40 out of these 50 subjects were under medical management for 6 months follow-up. Myomectomy was required in 4 females and 6 females underwent hysterectomy. These findings were in line with the results of Suh-Burgmann E et al,[9] in 2014 and Ekine AA et al,[10] in 201 where the ultrasonographic features reported by the authors in their study subjects were comparable to the results of the present study.

It was also seen that from the results of the present study, it was also seen that four females who had endometrial polyps were referred to the Department of Obstetrics and Gynecology of the Institute and underwent polyp resection for their polyps. Concerning the histopathological assessment, two specimens depicted an endometrial carcinoma in situ. These subjects were then referred to the higher center for oncologic and gynecological assessment and management. These results correlated with the findings of Vernooij F et al,[11] in 2007 and Timmerman D et al,[12] in 2008 where results for endometrial polyps and histopathology comparable to the present study were also reported by the authors in their respective studies.

CONCLUSION

Considering its limitations, the present study concludes that gynecological concerns in reproductive age group females can be asymptomatic and undiagnosed. Pelvic ultrasound assessment is a rapid, non-invasive, and painless modality that can be done at all healthcare levels with a 2D ultrasound machine and access to a radiologist for interpretation of the image. Further literature studies for appropriate screening age and repeat screening time in screen-negative females along with the diagnostic efficacy of screening for various conditions can help make a structured ultrasound-based screening program for gynecological conditions including in India.

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