Pelvic Ultrasound Imaging-Based Prevalence of Gynecological Morbidity in a Population of Asymptomatic Reproductive-Age Women Attending a Healthcare Outreach Program in the Andaman and Nicobar Islands of India

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Abstract

Gynecological morbidity in the reproductive age is defined as any condition, disease, or dysfunction of the reproductive system that is not related to pregnancy, abortion, or childbirth. Common gynecological symptoms include irregular menstruation, white vaginal discharge, burning urination, itching of the vulva, inguinal swelling, and nonmenstrual bleeding or spotting and chronic pelvic pain. Masses of the reproductive tract, adnexal masses, and polycystic ovary syndrome also occur in the reproductive age group. Gynecological disease contributes to nearly 4.5% of the overall global disease burden and exceeds the prevalence of other major global diseases such as malaria, tuberculosis, ischemic heart disease, and maternal conditions. Ultrasound is a painless, noninvasive imaging modality that can be used for the detection of gynecological abnormalities. This study uses pelvic ultrasound imaging to estimate the prevalence of gynecological morbidity in a population of asymptomatic reproductive-age women attending a healthcare outreach program in the Andaman and Nicobar Islands of India.

Keywords

- ultrasound
- fibroids
- cyst
- Andaman and Nicobar Islands
- pelvic ultrasound
- screening

Introduction

Gynecological morbidity in the reproductive age is defined as any condition, disease, or dysfunction of the reproductive system that is not related to pregnancy, abortion, or childbirth.[1] Common gynecological symptoms include irregular menstruation, white vaginal discharge, burning urination, itching of the vulva, inguinal swelling, and nonmenstrual bleeding or spotting and chronic pelvic pain.[2–5] Masses of the reproductive tract, adnexal masses, and polycystic ovary syndrome also occur in the reproductive age group.[6,7] Gynecological disease contributes to nearly 4.5% of the overall global disease burden and exceeds the prevalence of other major global diseases such as malaria, tuberculosis, ischemic heart disease, and maternal conditions.[8] Ultrasound is a painless, noninvasive imaging modality that can be used for the detection of gynecological abnormalities. We aimed to study the pelvic ultrasound imaging-based prevalence of gynecological morbidity in a population of asymptomatic

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reproductive-age women attending a healthcare outreach program in the Andaman and Nicobar Islands of India.

Methods

The study protocol utilized a cross-sectional design that was approved by the institutional ethics committee and adhered to the tenets of the Declaration of Helsinki. The screening was done at a camp setting at a hospital in Port Blair, Andaman and Nicobar Islands, India, between July 2020 and November 2020 on specified dates that were announced in advance to the population. Information about the camp was disseminated in advance using banners displayed at prominent places including marketplaces, banks, and other places where public gatherings were common. Self-selected participants registered themselves for the screening camp on the specified dates. The details of the examination, follow-up, and referral patterns were explained to participants and informed consent was obtained prior to assessments. Participants who had undergone prior treatment or were currently under treatment from the gynecology department for any symptomatology were excluded from the screening camp. These subjects were advised to follow up with the gynecology department.

Selected participants were taken to a waiting area, a room with a pleasant ambience, and were instructed to drink water and maintain a full bladder status. Demographic details including name, age, and contact details were collected from all participants. A clinical history of any significant gynecological complaint, menstrual cycle, and other complaints was elicited. An ultrasound examination of the pelvis was performed for all eligible participants using a GE Logic 3 Pro instrument in a private room with a pleasant ambience. Ultrasound was done per abdomen using a convex 3.5 to 5 MHz probe. The lower abdomen of the patients was scanned in sagittal and transverse planes by a radiologist with 9 years of experience in the field. The suprapubic area was scanned to visualize the uterus and ovaries. The pouch of Douglas and pelvis was also evaluated for any additional findings.

The common conditions of interest for the screening program included uterine fibroids, ovarian cystic mass, retained products of conception, intrauterine contraceptive device (IUCD), endometriosis, endometrial polyp, and conditions associated with posthysterectomy status and postmenopausal status.

Uterine fibroids were considered 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 may be bulky or show an altered uterine contour. Posterior acoustic shadowing and cystic changes may be present.

On ultrasound, follicular cysts present 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. The ultrasound of a corpus luteal cyst shows a small complex ovarian cyst with wall vascularity on power Doppler analysis. The characteristic circular Doppler appearance is called the "ring of fire." The cyst shows good through-transmission and no internal vascularity. Hemorrhagic ovarian cyst presents as a unilocular thin-walled cyst with fibrin-strands or low-level echoes and good through transmission. On ultrasound, endometrioma can be variable but the great majority (~95%) of patients present with a classic homogeneous, hypoechoic cyst with diffuse low-level echoes.

The polycystic ovary syndrome often shows 10 or more peripheral simple cysts usually with a "string-of-pearls" appearance and the ovaries are typically enlarged, although in 30% of patients the ovaries have a normal volume.

On imaging, the ovarian hyperstimulation syndrome often shows bilateral ovarian enlargement with multiloculated cysts that can totally replace the ovary. The clinical history is the distinguishing feature to make the diagnosis of ovarian hyperstimulation syndrome. A tubo-ovarian abscess shows a thick-walled complex cystic ovarian lesion is seen with an abundant flow. Malignant cystic lesions of the ovary often show a very large multiloculated cystic lesion in the region of the right adnexa. The locules may contain uniform low-level echoes, consistent with proteinaceous content, such as hemorrhage or mucin. The septations appear somewhat thicker, partially caused by the lower scan resolution at great depth. The septations may show vascularity with solid components and ascites.

Ultrasound is typically the first-line investigation in suspected retained products of conception and shows a variable amount of echogenic or heterogeneous material within the endometrial cavity. In some instances, this may present as an endometrial or intrauterine mass. The presence of vascularity within the echogenic material supports the diagnosis but the absence of color Doppler flow has a low negative predictive value because retained products of conception may be avascular. Retained products of conception can be suspected on ultrasound if the endometrial thickness is more than 10 mm following dilatation and curettage or spontaneous abortion (80% sensitive).

Ultrasound is the preferred modality for assessing an IUCD. Properly placed IUCD may be visualized as a straight hyperechoic structure in the endometrial canal of the uterus and the arms of the IUCD extending laterally at the uterine fundus. Distance from the uterine fundus more than 4 mm is more often associated with symptoms such as bleeding and pain, as well as with a higher risk of expulsion or displacement, although most low IUCDs migrate to the fundus in a few months. Endometrial polyps are seen usually as solitary homogeneous and echogenic lesions. It is rarely hypoechoic or heterogeneous. The stalk to the polyp may either be thin-(pedunculated)-or-broad based. It may appear isoechoic as a focal nonspecific thickened endometrium, without visualization of a discrete mass.

Patients with significant positive findings on the ultrasound examination were referred to the gynecologist for further management. Those who had a negative ultrasound screen and were asymptomatic were advised to visit if they developed any symptoms of gynecological abnormalities in the future.

Table 1 Distribution of age of the asymptomatic females included in the study

Sl no	Age group	Number of patients
1	11–20 years	2
2	21–30 years	351
3	31–40 years	401
4	41–50 years	85
5	51–60 years	21
6	>60 years	3
	Total	863

Data were entered into an MS Excel spreadsheet and anonymized for analysis. The distribution of various conditions is presented as frequency distributions and proportions.

Results

A total of 948 patients were screened over a period of 5 months. Menstrual irregularity ($n = 23$), vaginal itching ($n = 28$), and white discharge ($n = 17$) were the most common symptoms described by the participants in the screening participants. Other presenting complaints included vaginal bleeding ($n = 5$) and stress incontinence ($n = 2$). Ten patients had a prior hysterectomy for multiple uterine fibroids ($n = 5$), obstetric complications ($n = 3$), endometrial carcinoma ($n = 1$), and cervical cancer ($n = 1$). We excluded these 85 patients from the study and referred them for gynecological examination. The remaining 863 asymptomatic females were included in the study and most of them were between 21 and 40 years of age (►**Table 1**).

Eighty-six (9.97%, 95% confidence interval [CI]: 81.4, 12.14) of these 863 women had a significant gynecological or obstetric finding on the ultrasound assessment of the pelvis (►**Table 2**). Fifty-eight (6.72%, 95% CI: 5.24, 8.60) of the 863 women had a gynecological finding. Twenty-eight (32.56%) of these 86 women were pregnant and were referred for further care to the obstetrics department. None of the women had an abnormality of any inserted IUCD. Eleven women had a postmenopausal status with a small-sized uterus and atrophic ovaries on ultrasound assessment. The endometrial thickness was less than 4mm. Uterine fibroids were identified in 25 patients and 22 of these 25 women did not report any symptoms. Women that were diagnosed with uterine fibroids were referred to the gynecological department. They were managed with medications and 20 of these 25 women were under medical control after 6 months of follow-up. Two women needed a myomectomy, and three women had a hysterectomy. Two women with endometrial polyps were referred to the gynecology department and underwent polyp resection. On histopathological examination, one specimen showed an endometrial carcinoma in situ. The patient was referred to a higher center for onco-gynecological evaluation and management.

Table 2 Distribution of gynecological and obstetric findings on screening USG pelvis in asymptomatic females

Sl no	Diagnosis	Number of patients
1	Antenatal status	28
2	Single uterine fibroid	4
3	Multiple uterine fibroids	21
4	Right or left ovarian cystic mass	4
5	Retained products of conception	1
6	Intrauterine contraceptive device	12
7	Endometriosis	3
8	Endometrial polyp	2
9	Postmenopausal status	11
	Total	86

Abbreviation: USG, ultrasonography.

Discussion

An obstetric or gynecological finding was found in nearly 10% of asymptomatic females of reproductive age that were screened in our study, which included 6.7% of women with a gynecological finding. Uterine fibroids were identified in 25 women and most of them (88.0%) did not report any symptoms. The screening also identified endometrial polyps that needed resection and endometrial carcinoma in situ.

Gynecological problems in reproductive age may remain undiagnosed in the absence of routine screening programs. Healthcare for gynecological problems is often sought only when symptomatic and might be late for conditions like tumors or resectable masses. The delay in seeking care, diagnosis, and advanced stages at presentation can lead to complications during management, increased morbidity, reduced quality of life, and loss of working manpower days.

Ultrasound is a simple, easily available, affordable mode of screening that is painless and can provide rapid results. Ultrasound is radiation safe and can be done at any peripheral center that has a basic two-dimensional (2D) ultrasound machine and a sonologist. Accurate interpretation and clinical correlation of the images are essential to reduce false positives and for appropriate triage for further care and must be done by a trained radiologist.

Screening programs must be integrated with appropriate triaging and referral systems. Ideally, conditions that are screened for must have a therapeutic management pathway. This is essential to ensure that screen-positive patients receive the appropriate management for the appropriate duration of care. We found asymptomatic patients with fibroids that needed treatment and were provided appropriate care in this study. The screening identified an early endometrial carcinoma in situ that was asymptomatic and benefited from early intervention.

The single-center nature of the study and assessment by an experienced trained radiologist are strengths of the study.

Participants in the screening program were self-selected and this can bias the estimates of prevalence as women with some discomfort even though asymptomatic may present to the screening program.

In conclusion, gynecological problems in reproductive age groups may be asymptomatic and hence undiagnosed. Ultrasound assessment of the pelvis offers a painless, noninvasive, rapid screening modality that can be performed at all levels of healthcare that has a 2D ultrasound machine and access to a radiologist for image interpretation. Further studies on the appropriate ages for screening and the interval for a repeat screening in screen-negative women and the diagnostic effectiveness of screening for different conditions can help establish a structured ultrasound-based screening program for gynecological conditions.

Conflict of Interest
None declared.

References

1 National Research Council. 2000. The Consequences of Maternal Morbidity and Maternal Mortality: Report of a Workshop. Washington, DC: The National Academies Press. Available at: https://doi.org/10.17226/9800
2 Hirani DG, Hirani M. Prevalence of various gynecological problems in adolescent girls 10–19 years of age attending outpatient Department at tertiary care institute of Bhuj, Kutch, Gujarat, India. J Obstet Gynaecol 2020;6(02):51–56
3 Khanna A, Goyal RS, Bhawsar R. Menstrual practices and reproductive problems: a study of adolescent girls in Rajasthan. J Health Manag 2005;7(01):91–107
4 Prusty RK, Unisa S. Reproductive tract infections and treatment seeking behavior among married adolescent women 15-19 years in India. Int J MCH AIDS 2013;2(01):103–110
5 Rathod AD, Chavan RP, Pajai SP, Bhagat V, Thool P. Gynecological problems of adolescent girls attending outpatient department at tertiary care center with evaluation of cases of puberty menorrhagia requiring hospitalization. J Obstet Gynaecol India 2016;66(Suppl 1):400–406
6 Biggs WS, Marks ST. Diagnosis and management of adnexal masses. Am Fam Physician 2016;93(08):676–681
7 Lizneva D, Suturina L, Walker W, Brakta S, Gavrilova-Jordan L, Azziz R. Criteria, prevalence, and phenotypes of polycystic ovary syndrome. Fertil Steril 2016;106(01):6–15
8 Wijeratne D, Fiander A. Gynaecological disease in the developing world: a silent pandemic. Obstet Gynaecol 2018;20(04):237–244

