

Poster number EP19.20

Accuracy and positive predictive value of ultrasonogram in detecting cervicitis in females of reproductive age group

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Introduction

Cervicitis is a clinical syndrome characterized by inflammation of epithelium of uterine endocervix (1). It can be caused by infectious agents like Neisseria gonorrhoea, Chlamydia trachomatis, Herpes simplex, Trichomonas vaginalis and Mycoplasma genitalium and noninfectious agents like pessaries, mechanical trauma, soaps and laundry products. small group of bright dots in the endocervical canal (2). Increased vascularity is a feature of acute cervicitis; This has not been taken as a criteria in our study as adding this to the criteria will affect the sensitivity and specificity values of chronic cervicitis; Distinguishing acute from chronic cervicitis is beyond the scope of this study. It was noticed that many patients referred by the GP for USG imaging for intermittent and nonspecific lower abdominal pain were found to have features suggestive of cervicitis. No other significant intraabdominal findings were often detected. Objectives of this study were 1) to assess positive predictive value and accuracy of ultrasound in detecting cervicitis 2) to form an imaging criteria for diagnosis of cervicitis when incidental findings such as those mentioned above are seen

Materials and methods

After institutional review committee approval, a prospective study was planned from January to March 2023. A sample population of 40 patients referred by the GP for USG pelvis for lower abdominal pain/history of discharge/unrelated causes with no previous history of diagnosed cervicitis and ultrasound showing the following criteria were included in the study: 1) Echogenic cervical mucosal thickening (Fig 1) 2) Heterogenous echotexture with multiple small bright spots in endocervical canal (Fig 2). Detailed history was taken and TVS evaluation was done for these patients. Following TVS evaluation, they were subject to gynecological examination and pap smear. A control population of another 40 patients referred for USG pelvis for lower abdominal pain/vaginal discharge/unrelated causes like menstrual disturbances and infertility with no USG findings of cervicitis were also studied after taking their consent. They were then sent for gynaecological examination and pap smear evaluation. An inflammatory smear and positive gynecological examination findings were taken to be confirmatory of the diagnosis. This was a double blinded study. Inclusion criteria: Female patients in reproductive age group with USG criteria positive for cervicitis. Exclusion criteria: Patients with discrepancy in gynaecological findings and PAP smear.

Results

Out of 40 patients with USG criteria positive for cervicitis, 36 patients had an inflammatory smear and positive gynecological findings. Out of the 40 patients who had no positive findings on USG, 18 patients had inflammatory smear and positive gynecological examination findings. The positive predictive value was 90% and sensitivity was 67%. Specificity was about 84.6%. In all patients who satisfied the USG criteria, multiple Nabothian cysts were found, more than 3 in number. Among the 36 patients who tested positive for cervicitis, 23 had history of non-specific lower abdominal pain accounting for about 63.8%. In the control population only 6 patients gave history of lower abdominal pain. 22 out of 36 patients gave history of vaginal discharge. Out of the total 80 patients, 25 had other findings on USG which could have contributed to their symptoms; majority being uterine fibroids followed by endometrial polyps and thickened endometrium

Discussion

Ultrasound was found to have a good positive predictive value, sensitivity and specificity in screening for cervicitis. While these values may not suggest ultrasound as an investigation for public screening of cervicitis, it does definitely suggest that an ultrasound criterion for incidentally detected features of cervicitis should prompt further gynecological evaluation. The high incidence of multiple Nabothian cysts in these patients suggests that this could be used as a secondary aid in diagnosis of cervicitis. 63.8% of the patients with cervicitis had complaints of nonspecific intermittent lower abdominal pain. . Cervix appear bulky and heterogenous with a Many cases of non-specific lower abdominal pain being managed conservatively by the general practitioner could prove to be a case of undetected cervicitis. Formulating a USG criteria for cervicitis and including it in a routine checklist in the ultrasound abdomen and pelvis examination could guide a referral to the gynaecologist for the management of the same. While USG pointers for cervicitis has been described in literature, its accuracy in detection of the same has not been studied. The results of this study should also raise possibility of overlooked cervicitis in females with nonspecific lower abdominal pain; however a dedicated study with follow up after treatment is required to definitively establish cervicitis as a cause for lower abdominal pain. Relatively lesser number of study subjects was another limitation of this study. Routine ultrasound abdomen exams for patients with nonspecific abdominal pain or vaginal discharge should include a screening for cervicitis. Imaging criteria should include thickening of echogenic cervical mucosa, heterogenous echotexture with small echogenic bright spots and multiple Nabothian cysts. While ultrasound as an imaging modality cannot replace the gold standards of gynecological evaluation, an incidental ultrasound diagnosis in unsuspecting patients can definitely increase detection rates.

Conclusion

Routine ultrasound abdomen for any nonspecific abdominal or pelvic pain should include a screening for cervicitis. Imaging criteria should include thickening of echogenic cervical mucosa, heterogenous echotexture with small echogenic bright spots and multiple Nabothian cysts. An ultrasound criterion for detection of cervicitis can help avoid a missed diagnosis.

References

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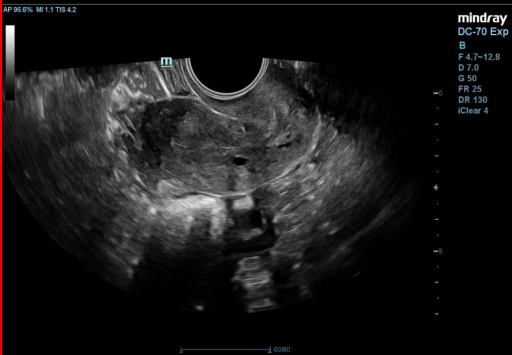


Figure 1. Transvaginal sonogram showing echogenic cervical mucosal thickening.

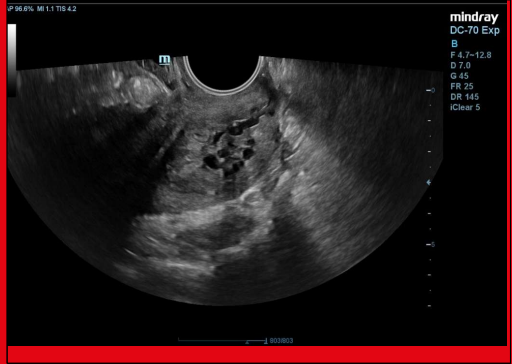


Figure 2. Transvaginal sonogram showing heterogenous echotexture of cervix with multiple echogenic bright spots. Incidentally multiple Nabothian cysts also seen