

The Significance of Routine Breast and Cervical Examination with Cervical Cytology Screening During Pregnancy: Do Working Women Have Higher Risks Than Housewives ?

Gebelikte Rutin Meme ve Servikal İnceleme ile Servikal Sitoloji Yapılmasının Önemi: Çalışanlar Ev Hanımlarına Göre Daha Büyük Risk Altında mı ?

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ABSTRACT Objective: To present our experience on routine breast and cervical examination in our cohort of pregnant women. **Material and Methods:** A total of 154 low-risk pregnant women during the first trimester of pregnancy who had no complaints or symptoms concerning breast or genitourinary system were randomly allocated to the study. After breast examination, ultrasonography (USG) were performed in the presence of palpable breast lesions or axillary lymphadenopathy (LAP). Cervical and cytological examination [Papanicolaou (Pap) smear] were performed to all women. Samples for cervical cytologic examinations were prepared by conventional method and evaluated according to the Bethesda System. The breast and cervical examination findings in working women (n=41) and housewives (n=113) were compared. Mann-Whitney, chi-square, Spearman and Phi-Cramer's correlation tests were performed for statistical analysis. **Results:** Seventeen women had palpable mass on breast examination, 1 had LAP and 2 had both palpable masses and LAP, but 8 had pathological findings on USG (1 ductal ectasia with LAP, 2 fibroadenomas, 3 fibrocystic changes and 2 only LAP). Sixty-four women had normal cervical examination, but 56 had leucorrhoea and 31 had ectropion. On cervical cytology, 11 patients (7.1%) had reactive cellular changes associated with inflammation, whereas 137 had normal cytology. Housewives significantly had less masses (8.9 vs 26.3%, p<0.05), but similar pathological findings on breast USG (25% vs 41.7%, p>0.05) compared to working women. Cervical examination results were similar in both groups, but less working women had reactive cellular changes associated with inflammation (0 vs 10.2%, p<0.05) on cytology. Pathological findings on breast examination (p<0.01, rPhi=0.222) and cervical cytology (p<0.01, rPhi=-0.172) correlated with working status. However, working status did not correlate with breast USG (p>0.05, rPhi=0.177) or with cervical examination (p>0.05, rPhi=0.160). **Conclusion:** Pregnant women should have a breast and a cervical examination in the first trimester. Working pregnant women had more pathological breast examination findings, but lower cervical cytologic changes than housewives. This result seems to be related with the effect of higher age of pregnancy and lower parity on breast changes.

Key Words: Breast; cervix uteri; first trimester; pregnancy

ÖZET Amaç: Gebelerde meme ve servikal muayenenin rutin yapılmasıyla ilgili tecrübemizi sunmaktır. **Gereç ve Yöntemler:** Düşük riskli ve meme veya ürogenital sistemle ilişkili şikayet ve semptomları olmayan, ilk trimesterde bulunan 154 gebe çalışmaya randomize alındı. Hastalara meme muayenesi yapılarak palpe edilebilen meme lezyonu veya aksiller lenfadenopati (LAP) varlığında ultrasonografi (USG) uygulandı. Tüm hastalara servikal muayene ve sitoloji k tetkik [Papanicolaou (Pap) smear] yapıldı. Servikal sitoloji örnekleri konvansiyonel metotla hazırlanıp "Bethesda Sistemi"ne göre değerlendirildi. Meme ve servikal muayene bulgularını, çalışan hastalar (n=41) ile ev hanımları (n=113) arasında kıyasladık. İstatistiksel analizde Mann-Whitney U, ki-kare; Spearman ve Phi-Cramer korelasyon testleri kullanıldı. **Bulgular:** Meme muayenesinde 17 hastada palpabl kitle, 1 hastada LAP ve 2 hastada hem palpabl kitle hem de LAP vardı, ancak 8 kişide USG'de patolojik bulgular saptandı (1 duktal ektazi ile LAP, 2 fibroadenom, 3 fibrokistik değişiklik ve 2 LAP). Altmışdört kişide servikal muayene normal, 56 hastada lökore ve 31 kişide "ectropion" bulundu. Servikal sitolojide 11 kişide (%7.1) iltihaba bağlı reaktif hücresel değişiklikler, 137 kişide normal doku saptandı. Ev hanımlarında çalışanlara kıyasla memede kitle belirgin olarak daha az olmasına karşın (%26.3'e karşı %8.9, p<0.05), meme USG'de patolojik bulgu varlığı iki grupta farklı değildi (%41.7'ye karşı %25, p>0.05). Servikal muayene bulguları her iki grupta benzerdi, fakat sitolojide iltihaba bağlı reaktif hücresel değişiklikler çalışanlarda daha az izlendi (%10.2'ye karşı %0, p<0.05). Meme muayenesinde patolojik bulgu varlığı (p<0.01, rPhi=0.222) ve servikal sitoloji (p<0.01, rPhi=-0.172) çalışıyor olmak ile ilişkili bulundu. Bununla birlikte, çalışıyor olmak meme USG (p>0.05, rPhi=0.177) veya servikal muayene (p>0.05, rPhi=0.160) bulguları ile ilişki göstermedi. **Sonuç:** Gebelere ilk trimesterde meme ve servikal muayene yapılmalıdır. Çalışan gebelerde ev hanımlarına göre meme muayenesinde daha fazla patoloji ancak daha az servikal sitolojik değişiklik görülmektedir. Bu etki çalışanlarda gebelik yaşının daha ileri oluşu ve paritenin daha düşük olması ile ilişkili gibi görünmektedir.

Anahtar Kelimeler: meme, serviks, birinci trimester, gebelik

Pregnancy represents an exceptional opportunity for the early diagnosis of cervical cancer since visual inspection, cytological examination and bimanual palpation are considered to be part of routine antenatal care.¹ Routine cervical cytology is highly recommended to be performed during pregnancy, and cytologic and colposcopic diagnoses may supply enough data to avoid unnecessary biopsies.^{2,3} In a national study on antenatal care made in Denmark, vaginal examination was reported in 95% whereas cervical smear was in 41% of first visits. On the contrary to the previous studies, the authors have concluded that cervical cytology was grossly overused.⁴ Since the cytopathologic characteristics in pregnant and postpartum women are liable to make the clinician give a false positive diagnosis, clinicians should cast more attention to screening cervix lesions.⁵

Approximately 1-2% of breast cancers are diagnosed during pregnancy.⁶ Pregnancy makes it difficult to examine the breast with the usual methods.⁷ A baseline clinical examination must be established at the first prenatal examination before breast changes can mask a small lesion.⁸ Ultrasound and biopsy are the only significant examinations in pregnancy and lactation. Ultrasonography (USG) is the diagnostic method of choice when nodes are formed in the breast during pregnancy. Mammography is contraindicated because of radiation. Assessments by palpation and magnetic resonance imaging (MRI) are problematic during pregnancy.⁷ Breast cancer should always be considered as a differential diagnosis for a breast problem during pregnancy.⁸

In this study, our aim was to present our experience on routine cervical and breast examination in our cohort of pregnant women.

MATERIAL AND METHODS

The study included 154 low-risk pregnant women who came for routine follow-up between 2005 and 2006. The study was approved by the Institutional Review Board and the principles declared by World Medical Association (WMA) at Helsinki were followed. All women were in the first trimester of pregnancy; had no complaints or symptoms

concerning breast or genitourinary system such as nipple discharge, pain, or postcoital bleeding. A breast examination was performed and USG was obtained in the presence of palpable breast lesions or axillary lymphadenopathy (LAP). Breast examinations were performed as previously described⁹ by physicians working in the antenatal care unit. Breast USG was performed in another 8 women because they declared that they had palpable breast lesions previously before the present pregnancy, but had no palpable lesions in the last manual breast examination. The women with palpable breast lesions were followed up by USG and consulted with a general surgeon. Biopsy was considered in persisting masses or masses suspicious for cancer; however none of these patients needed biopsy regarding consultation or other criteria.

Additionally, cervical examination and cytology were performed to all women. Samples for cervical cytologic examinations [Papanicolaou (Pap) smear] were obtained from the portio and slides were prepared by conventional method and evaluated according to the Bethesda System. We also compared the breast and cervical examination findings in working women (academician, doctor, nurse, teacher, technician, officer, n= 41) and housewives (n= 113).

Data were stored and analyzed with the SPSS program (Statistical Package for Social Science, release 11.0; SPSS, Chicago, IL) for Windows. The distributions of variances of all the parameters in the study were evaluated by Kolmogorov-Smirnov test to identify the normally distributed parameters. We performed Mann-Whitney U test for the parameters that were not normally distributed. For comparisons between proportions, chi-square test, and for correlations Spearman and Phi-Cramer's correlation analysis' were used.

RESULTS

Out of 154, 17 women had palpable mass on breast examination, 1 had LAP and 2 had both palpable masses and LAP. However, out of these 20 patients only 8 had pathological findings on USG (1 ductal ectasia with LAP, 2 fibroadenomas, 3 fibrocystic changes and 2 only LAP).

Sixty-four women had normal cervical examination, but 56 had leucorrhoea (48 mycosis and 8 bacterial vaginosis), 31 had ectropion and 3 had urethral polyps on speculum examination. On cervical cytology screening, 11 pregnant women (7.1%) had reactive cellular changes associated with inflammation, whereas 137 had normal cytology.

Median (min.-max.) age was significantly higher [29 (24-43) vs 26 (18-39) years, $p < 0.001$], but gravidity [1 (1-4) vs 2 (1-6), $p < 0.05$] and parity [0 (0-1) vs 1 (0-3), $p < 0.05$] were lower in working women compared to housewives. On breast examination, housewives significantly had less masses (8.9 vs 26.3%, $p < 0.05$), but similar pathological findings on breast USG (25% vs 41.7%, $p > 0.05$) compared to those in working women. Cervical examination results were similar in both groups ($p > 0.05$), but less working women had reactive cellular changes associated with inflammation (0 vs 10.2%, $p < 0.05$) on cytology (Table 1).

There was no correlation between age and breast examination or USG results, and cervical examination or cytology ($p > 0.05$). Pathological findings on breast examination ($p < 0.01$, $r_{Phi} = 0.222$) and cervical cytology ($p < 0.01$, $r_{Phi} = -0.172$) correlated with working status. However, working status did not correlate with breast USG ($p > 0.05$, $r_{Phi} = 0.177$) or with cervical examination ($p > 0.05$, $r_{Phi} = 0.160$).

DISCUSSION

Abnormal cervical cytologic findings were recorded in 0.8% to 1.63% of pregnant women.^{2,3} The incidences of abnormal epithelial patterns by liquid-based cytology (LBC), cervical intraepithelial neoplasia (CIN) and infection were found in 23.58%, 1.13% and 19.02% of pregnant women, respectively.¹⁰ The authors have concluded that liquid-based cytology is necessary, safe and acceptable for routine prenatal tests. We have prepared our samples by conventional method. In our study, only 11 women had reactive cellular changes associated with inflammation (7.1%), 36.3% had infection (mycosis and bacterial vaginosis), but none had CIN. The discrepancy in terms of cytology or infection may arise from studying different populations, our limited study population, using different methods, selection bias or inadequate control of confounding factors in different studies.

An abnormal cervical smear should generally be managed as in the non-pregnant state. However, colposcopy and biopsies are mainly intended to exclude invasive disease because a conservative approach is preferred in cases of pre-invasive disease. The only absolute indication for conization in pregnancy is to rule out micro-invasive disease or make the diagnosis of invasive carcinoma when such a diagnosis will alter the timing or mode of delivery.¹ Some other authors have proposed that an isolated report of atypical squamous cells on cervical cytology obtained at the initial prenatal visit

TABLE 1: Patients' characteristics; breast and cervical examination, cytology, ultrasonography results according to working status.

Characteristics	Housewives (n= 113)	Working women (n= 41)	p
Age (years)	26 (18-39)	29 (24-43)	< 0.001
Gravidity	2 (1-6)	1 (1-4)	0.021
Parity	1 (0-3)	0 (0-1)	0.011
Abortion	0 (0-3)	0 (0-1)	0.447
Positive findings on breast examination (n= 20)	10 (8.9%)	10 (26.3%)	0.014
Breast USG (n= 28)	Positive findings on USG	5 (41.7%)	0.432
	Negative USG	12 (75%)	
Cervical examination	Normal	22 (53.7%)	0.139
	Leucorrhoea (mycotic+mixt)	46 (40.7%)	
	Ectropion	24 (21.2%)	
Cervical cytology	Normal	41 (100%)	0.036
	Reactive cellular changes associated with inflammation	11 (10.2%)	

does not warrant colposcopic evaluation during pregnancy, unless a repeat cytology suggests CIN.¹¹ Lesions up to carcinoma in situ (CIS) do not require intervention during pregnancy but when microinvasive carcinoma is suspected, diagnostic LEEP conization is necessary, even during pregnancy.¹² Since the persistence rate of CIS complicating pregnancy is high, the use of routine biopsy at the time of colposcopy is recommended in such patients.¹³ Atypical glandular cells (AGC) found upon Pap smear during pregnancy can be associated with significant pathology for which an aggressive management approach is warranted.¹⁴ Some authors evaluated the impact of the Bethesda System (TBS) 2001 in reporting the cytology of atypical squamous cells (ASC) when using conventional Pap smears and LBC preparations. The Bethesda System improves the positive predictive value of atypical squamous cells (ASC) for clinically significant lesions,¹⁵ and the Bethesda System is the system of choice in the evaluation of cervical cytology.

Benign tumors in the breast during pregnancy are often "lactating adenomas".⁷ Cytologic diagnoses of pregnancy-associated breast masses those of which biopsied by fine-needle aspiration were reported as galactocele (20%), lactating adenoma (36%), fibroadenoma with lactational change (28%), juvenile fibroadenoma with lactational change (4%), atypical reactive duct cells with lactational change (4%) and infiltrating duct carcinoma (8%), and none of the patients with galactocele, lactating adenoma or fibroadenoma subsequently developed carcinoma in the follow-up period of 27 months.¹⁶ Lactating adenomas are diagnosed on fine needle aspiration cytology. Sonographic studies are not diagnostic and surgical biopsies are not recommended as a majority of the lesions are known to regress spontaneously.¹⁷ None of the patients in our study were biopsied but followed up with USG to find out if they were persisting or not, thus it was not possible to conclude if lactating adenomas or other pathologies constituted the diagnosis in breast lesions observed in our cohort of pregnant women. This was one of the weaknesses of our study.

The most common variant condition of the breast experienced by women has been traditio-

nally known as fibrocystic changes, and these altered breast conditions are found most often in reproductive women between the ages of 30 and 50. The term fibrocystic changes was proposed by the American Cancer Society as an umbrella categorization for a number of conditions that involve alterations in the lobular, lobe, or subareolar portions of the breast.¹⁸ Fibrocystic changes should be followed up especially in women above 40-45 years of age and with a family history of breast cancer. The risk for cancer in women having fibrocystic changes is increased when there is an accompanying proliferative lesion or proliferative changes.⁹ Unlike cysts, fibroadenomas are solid, encapsulated, and usually nontender masses, most commonly found in the upper outer quadrant and tend to be unilateral, and more than one can be present at a time.^{6,19} The relation of fibroadenomas with breast cancer is complicated. If the size of the mass increases over time or if the client expresses anxiety about leaving the mass intact, then the general recommendation is surgery to remove and biopsy the mass. Alternatively, excision may be performed. If there are no other risk factors for breast cancer, and the woman is less than 35-40 years of age, then expectant management is warranted. If the woman is older than 35-40 years old, then referral for the excision of the mass is recommended. However, the presence of a complex fibroadenoma increases the risk of future breast cancer development especially when there is a family history of breast cancer.^{6,20} In our study, patients with fibroadenoma had a 1x2cm and a 2x2cm masses, had no history of breast cancer and they were between 21 and 32 years old. Thus, we delayed a possible removal and biopsy of the masses after the completion of pregnancy. Mammary duct ectasia is thought to be the result of chronic inflammation and dilation of the lactiferous ducts resulting in increased glandular secretions. An accompanying subareolar mass can be found and it usually results in an excision of the source duct. When an excision is not required, treatment of a duct ectasia is symptomatic and involves emphasizing good nipple and areola hygiene with a limit to any additional stimulation,⁶ all of which were considered in one of our patients diagnosed as having ductal ectasia.

In conclusion, pregnant women should have a breast and a cervical examination in the first trimester. It was found that, working pregnant women had more pathological breast examinations, but lower cervical cytologic changes than housewives. This seems to be the effect of higher age of

pregnancy, lower parity, but higher educational status. However, clinical recommendations must await further studies involving a larger number of patients to determine the success of routine breast and cervical examination or cervical cytology screening in pregnant women.

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