RESEARCH ARTICLE

Cervical Cancer Screening in Turkey: A Community-based Experience After 60 Years of Pap Smear Usage

Hakan Demirhindi*, Ersin Nazlıcan, Muhsin Akbaba

Abstract

Cervical cancer is the second most common cancer in females in the World with around 500,000 new cases occurring annually, but the first in the developing countries with a high mortality if not diagnosed early. Papanicolau (Pap) smear is a cheap, easy-to-apply and widely accepted test which has been long used to detect cervical cancer at very early stages. However, despite being available for nearly 60 years, the test can hardly be considered to have become successfully applied in many communities. We aimed in this study to present the results of a screening survey for cervical cancer which targeted a women population aged between 35 and 40 living in a semi-rural area in the province of Hatay, located in the eastern Mediterranean region of Turkey, with specific aims of increasing early diagnosis, education and raising population awareness about cancers. This community-based descriptive study covered 512 women between 35 and 40 years of age living at Armutlu with a mean age of 37.6±1.7. Gynecologic examinations revealed cervical erosion in 8 (1.6%), vaginitis in 193 (37.7%) and normal findings in 311 (60.7%); pathological evaluation reports of the smears were negative in 290 (56.6%), inflammation in 218 (42.6%) and ASC-US in 4 (0.8%), according to the 2001 Bethesda classification. It can be concluded that Pap smear test - proven to be a very valuable test at the clinical level- should also be widely used at the community level to detect cervical cancer at very early stages to reduce both the mortality and morbidity among healthy people. The need for continuous community-based cervical cancer screening programs is strongly suggested.

Keywords: Cancer - prevention - cervical cancer - pap smear - screening - community

Asian Pacific J Cancer Prev, **13 (12)**, 6497-6500

Introduction

Cervical cancer is the second among gynecologic cancers in all over the world and the first in the developing countries. It has high mortality if not diagnosed early (Morris et al., 1996). Cervical cancer is the second most common cancer in females with around 500,000 new cases occurring annually. In 2002, cervical cancer accounted for 239,000 deaths (7.6% of female deaths due to malignant neoplasm) worldwide, around 2% of total weighted years of life lost in women aged between 25 and 64, and around 9.4% of the burden of disease in females caused by malignant neoplasms (WHO, 2004; Yang et al., 2004).

Developed countries have been successful in controlling the incidence of cervix cancer, whereas developing countries have failed in this respect. The success of developed countries is largely attributed to the widespread and systematic use of the Papanicolaou (Pap) smear test (Elovainio et al., 1997; Cronjé, 2005). The value of the cervical cancer screening in reducing the risk of cervical cancer and mortality has been firmly established, and it is estimated that regular screening reduces the risk of cancer up to 80% (Stewart and Kleihues, 2003; Özgül, 2010).

Of the 27,755 cancer cases observed in Turkey in 2002, 1,364 (4.9 %) were due to cervix cancer, while 725 (4.1%) of 17,768 women deaths in the same year were attributed to cervix cancer. According to these data, cervix cancer is the eighth most common cancer type in terms of both incidence and cause of death (Özgül, 2010). Although the frequency of the cervix cancer in Turkey is lower compared to many developed countries, which have skillfully established their national screening programs, it should not be ignored that Turkey is a country with young population, which experiences a demographic and social transformation (Kaya, 2009).

In Turkey, cancer screening activities are being conducted by "Early Diagnosis and Screening Centers for Cancer" (abbreviated as KETEM in Turkish) located in 49 provinces as well as by "Mother and Child Care and Family Planning Centers" in the context of the Reproductive Health Program and by means of the policlinic and clinic activities at the hospitals (Kaya, 2009; Özgül, 2010). For the early diagnosis of cervix cancer, a community-based Pap-smear screening program has not yet been implemented in Turkey except a few pilot studies (Özgül, 2010; Uysal and Birsel, 2010).

Pap-smear test, developed by Papanicolau and Trout, is

*Department of Public Health, Faculty of Medicine, Cukurova University, Adana, Turkey *For correspondence: h.demirhindi@gmail.com*

a very notable screening method for not only being cheap and easy-to-use, but also for being easily applicable to and accepted by different target populations in the community screenings, with a resulting noteworthy decrease of the deaths from cervix cancer.

A few limitations of the test can be expressed as insufficient collection of cells during sampling, difficulties in interpretation due to shading of epithelial cells by mucus, other cellular elements and/or blood (Chew et al., 2004; Zemheri and Koyuncuer, 2005).

We aimed in this study to present the results of a screening survey for cervical cancer which targeted a women population aged between 35 and 40 living in a semi-rural area in the province of Hatay, located at the eastern Mediterranean region of Turkey, with specific aims of early diagnosis, education and raising population awareness about cancers.

Materials and Methods

This community-based descriptive study covered women between 35 and 40 years living at Armutlu location of the province of Hatay. The study was planned and conducted by the Early Diagnosis, Screening and Education Center for Cancer of the Hatay Province (KETEM) which is a health institution of the Turkish Ministry of Health.

Household registry of the Armutlu Health Center revealed a total of 24,783 people in the region; among them 648 women between 35 and 40 years of age constituted our study group as they were declared as the target population for screenings by the written circular numbered 2007/40 of the Cancer Control Department of the Turkish Ministry of Health (Turkish Ministry of Health, 2007; Açıkgöz and Ergör, 2011).

The study was conducted between September and December 2009. The women in the study group were initially educated about cancers in general, but specifically about cervix cancer by the researcher physician and midwives. The local population was also informed about the subject by the help of printed handouts and posters. The names and addresses of women in the study group were listed and home visits were performed to inform them about the study and invite them at the proper time of their menstrual cycle in groups of ten to the Primary Health Care Center where a room was specifically equipped for cervical smear. The study group was initially planned to include all 648 women between 35 and 40 in the locality. But it was found that 18 were pregnant or had just given birth in the last two months, 17 were absent at the time of two consecutive visits, 44 were single and 22 women denied to participate in the study. Hence the final study group consisted of 512 (79.0%) women.

The women who arrived at the Primary Health Center to participate in the study signed an informed consent form after being re-informed and clarified for any question. A questionnaire about personal information, history of reproductive health and physical examination was filled for every woman followed by cervical smear sampling by brushing method at the transformation zone of the cervix according to medical literature (Fiscella and Franks, 1999). The samples obtained and carefully fixed with ethanol were transferred to the cytology laboratory before the end of the official working hours. The maximum attention was paid during the process taking into account that cervix carcinomas were greatly missed due to defects in sampling and evaluation procedures associated with 30% of the new cases of cervical cancer each year (ACOG, 2009).

The women who had not cared about the rules sited below and previously declared at home visits, which were also depicted at the handouts, were not sampled and re-invited for the procedure: 1) A sexual abstinence of at least 48 hours before sampling, 2) No vaginal douching since 24 hours before sampling, 3) No use of any vaginal medication (cream, tablets or any form) since 48 hours before sampling, 4) No menstrual bleeding.

Additionally re-sampling was needed for 57 women whose samples were reported as insufficient material by the cytology laboratory.

Cytology laboratory reported the examination results according to 2001 Bethesda classification: atypical squamous cell changes, atypical squamous cells of undetermined significance (ASCUS), atypical squamous cells – cannot exclude HSIL (ASC-H), low grade squamous intraepithelial lesions (LSIL), high grade squamous intraepithelial lesions (HSIL) and squamous cell carcinoma (Stoler, 2002).

The data were analyzed by SPSS 11.5 statistical package program.

Results

The mean age of the 512 participants were found to be 37.6±1.7 (min. 35, max. 40). Most of the women (395 women, 77.1%) reported to have primary school diploma, followed by 70 (13.7%) with high-school diploma, 27 (5.3%) with university diploma, while 20 women (3.9%) had no diploma. Nearly all of the women (497; 97.1%) were married in comparison to 15 (2.9%) divorced women or widows. The mean age at marriage was found to be 21.8±2.9 (min.15, max. 35). Smoker women's rate (348, 68.0%) was higher than non-smokers (164, 32.0%).

Genital cancer in family history was observed in 73 (14.3%) women. While 463 (90.4%) were house-wives; 38 (7.4%) and 11 (2.1%) women were civil servants and workers, respectively.

The participant women reported to have between none (15; 2.9%) and 10 children, with a mean of 3.2±1.4 children. While 262 (51.2%) women had no history of curettage, 232 (45.3%) had one, 17 (3.3%) had two and one (0.2%) had three curettages. Oral contraceptive pill use history was reported by 135 (26.4%) women compared to never (377 women; 73.6%). Hormone replacement therapy was prescribed to 63 (12.3%) women compared to never by 449 (87.7%) women.

In the study group only 48 (9.4%) women had smear test before compared to never (90.6%). Most of the women (494; 96.5%) had never heard about human papilloma virus (HPV) compared to 18 (3.5%) who had heard.

Post-coital bleeding was reported as frequently by 12 (2.3%), as seldom by 51 (10.0%) and as never by 449

Table 1. Pathology Reports of the Cervical Smears

Pathology Results	Frequency	Percent (%)
Normal	290	56.6
Inflammation	218	42.6
ASC-US	4	0.8
Total	512	100.0

Table 2. Comparison of Cervical Smear Results to the Results of Other Similar Studies

Pathology Results	Our study	Mehmetoğlu et al	Eroğlu et al	Talukder et al	Balaha et al	Öner et al
Normal	56.6		11.6	13.8		
Inflammation	42.6			22.8		
Infection			79.6	5.4		74.6
ASC-US	0.8		0.5	0.6	2.99	1.08
ASC-H					0.60	
LSIL		0.6	0.2		0.09	0.36
HSIL		0.6	0.2	1.2	0.68	0.36
Invasive ca			0.02	0.2	0.34	

(87.7%) women.

The gynecologic examinations revealed cervical erosion in 8 (1.6%), vaginitis in 193 (37.7%) and normal findings in 311 (60.7%); while pathological evaluation reports of the smears were negative in 290 (56.6%), inflammation in 218 (42.6) and ASC-US in 4 (0.8%) (Table 1).

Discussion

Cervical cancer is the second most common cancer in females with around 500,000 new cases occurring annually. In 2002, cervical cancer accounted for 239,000 deaths worldwide, around 2% of total weighted years of life lost in women aged 25-64 and around 9.4% of the burden of disease in females caused by malignant neoplasm (WHO, 2004; Yang et al., 2004). All these figures emphasize the extent of the possible effect of screening programs in decreasing the frequency of both the cervix cancer and death rates attributed.

Developed countries have decreased in a great extent the rate of cervical cancer by using Pap smear screening method in the last 50 years. This has emphasized the key role of effective screening program to detect precancerous lesions that could develop into invasive cancer (Ideström et al., 2002; Saraiya, 2003) as in the example of a cervical cancer screening program in Taiwan that achieved a 47.8% of decrease in the incidence of invasive cervix cancer between 1995 and 2006 (Chen et al., 2009).

Mehmetoğlu et al. (2010) reported epithelial cell anomalies in 4 (1.2%) cases among them 2 were LSIL and 2 were HSIL in a study performed in 332 married women attending a Family Medicine Clinic in Bursa Province of Turkey in 2010. Another study performed in Turkey by Eroğlu et al. (2008) among applicants to Konya provincial KETEM (Early diagnosis, screening and education center for cancer) for cervical smear reported cytology results as normal in 11.6%, infection in 79.6%, ASC-US in 0.5%, LSIL in 0.02%, HSIL in 0.02% and invasive cancer in 0.02%. A cervical smear screening in women between 17-65 years old age by Talukder et al. (2002) revealed normal cytology in 13.8%, non-specific inflammation in 82.8%, bacterial inflammation in 5.4%, ASC-US in 0.6%, HSIL in 1.2%, squamous cell carcinoma in 0.2%. When Balaha et al. (2011) examined the cases applying to a hospital found the rates of 2.99% for ASC-US, 0.6% for ASC-H, 0.09% for LSIL, 0.68 for HSIL, 0.34% for invasive cervical cancer. Öner et al. (2004) examined 17 years old and older married women in Doğankent, a semi-rural area of Adana province, in the Mediterranean region of Turkey and reported infection in 74.6%, epithelial cell changes in 1.8% with ASC-US in 1.1%, LSIL in 0.4%, HSIL in 0.4%.

The results of our study as 56.6%-normal, 42.6%-inflammation and 0.08%-ASC-US; appear different when compared to the studies mentioned above (Table 2). The most striking difference of our study derives from its methodology being a "community based" screening research, and its sampling method. While the others were performed among women applying to any kind of health setting (hospital, primary health care center, KETEM etc.); a population group was defined in our study and the participants were visited at their locality. It is worth underlining that 90.6% of our participants had never undergone smear test. But in another community based study targeting a similar population living in Adana province at the same Mediterranean region of Turkey, the results were found to be more similar. Another difference of our study is our study group's age interval, i.e. between 35 and 40, while the other studies examined different age groups. This limitation derived from the fact that the Health Ministry indicated this age group as the target group for screenings. The participants in other studies were women applying to any health setting with any kind of complaint, but our study group consisted of women with no complaints, hence known to be healthy; but this does not exclude the fact that our participants had undergone some recruitment criteria as had been described in the method section.

The four ASC-US cases detected in our study were referred to Mustafa Kemal University, Faculty of Medicine for advanced diagnosis and treatment, where gynecologists who examined the patients performed colposcopies to take cervical biopsies. The cases with vaginal infections were prescribed for medical treatment.

In conclusion, pap smear test, which is a cheap, easy-to-apply, community-friendly screening test; is widely used to detect cervical cancer at a very early stage like intra-epithelial lesions and hence reducing both the mortality and morbidity by the disease, in addition to low screening cost compared to that of the therapy.

Taking into account the presence of women who have never visited a gynecologist or obstetrician; Pap test should be offered at primary level of health care. Hence KETEMs (Early diagnosis, screening and education centers for cancer) should provide a community-based service, as supported by our study directed to women who had never been sampled for cervical smear.

The community should be enlightened about Pap smear test, including its aim, the required frequency of application, by diffuse educational activities, media programs. The aim should be the establishment of a well-

organized, continuous and community-based cervical cancer screening program; with final conclusion of reduced morbidity and mortality.

References

ACOG (American College of Obstetricians and Gynecologist) (2009). ACOG practice bulletin. No:109-2009. *Obstet Gynecol*, **114**, 1409-20.

Açıkgöz A, Ergör G (2011). Cervical cancer risk levels in Turkey and compliance to the national cervical cancer screening standard. *Asian Pac J Cancer Prev*, **12**, 923-7

Balaha MH, Moghannum MS, Al Ghowinem N, Al Omran S (2011). Cytological pattern of cervical Papanicolaou smear in eastern region of Saudi Arabia. *J Cytol*, **28**, 173-7.

Chen YY, You SL, Chen CA et al (2009). Effectiveness of national cervical cancer screening programme in Taiwan: 12-year experiences. *Br J Cancer*, **101**, 174-7.

Chew GK, Cruickshank ME, Smith AP (2004). Abnormal cervical smear. In: Oxford Textbook of Primary Medical Care. (Eds: Jones R, Britten N, Culpepper L, Gass D, Mant D, Grol R, Silagy C). Oxford University Press, p.878-84 http://ukcatalogue.oup.com/product/9780198565802.do Last accessed: 15 June 2012.

Cronjé HS (2005). Screening for cervical cancer in the developing world. *Best Pract Res Clin Obstet Gynaecol*, **19**, 517-29.

Elovainio L, Nieminen P, Miller AB (1997). Impact of cancer screening on women's health. *Int J Gynaecol Obstet*, **58**, 137-47.

Eroğlu C, Ünlü Y, Eryılmaz MA, Gönenç O (2008). Konya eğitim ve araştırma hastanesi Kanser Erken Teşhis-Tarama ve Eğitim Merkezi servikovajinal smear tarama deneyimi (Cervicovaginal Smear Screening Experience Early Cancer Diagnosis-Screening and Education Center Konya Education and Research Hospital). Jinekoloji-Obstetrik ve Neonatoloji Dergisi. Mart 2008.

Http://dergi.ztb.gov.tr/index.php?option=com_content&view=article&id=69:cervicovaginal-smear-screening-experience-early-cancer-diagnosis-screening-and-education-center-konya-education-and-research-hospital&catid=36:mart2008# Last accessed: 15 June 2012.

Fiscella K, Franks P (1999). The adequacy of Papanicolaou smears as performed by family physicians and obstetrician-gynecologists. *J Fam Pract*, **48**, 294-8.

Ideström M, Milsom I, Andersson-Ellström A (2002). Knowledge and attitudes about the pap-smear screening program: a population-based study of women aged 20-59 years. *Acta Obstet Gynecol*, **81**, 962-7.

Kaya M (2009). Halk sagligi yaklasimiyla servikal kanser (Cervical Cancer with Public Health Perspective) (Ed. Akın A.) HÜKSAM Yayınları, Ankara. [http://www.huksam.hacettepe.edu.tr/Turkce/SayfaDosya/ServiksKitabi.pdf] Last accessed: 15 June 2012.

Mehmetoğlu HC, Sadıkoğlu G, Özçakır A, Bilgel N (2010). Pap smear screening in the primary health care setting: a study from Turkey. *N Am J Med Sci*, **2**, 467-72.

Morris M, Tortolero-Luna G, Malpica A, et al (1996). Cervical intraepithelial neoplasia and cervical cancer. *Obstet Gynecol Clin North Am*, **23**, 347-410.

Öner S, Demirhindi H, Erdoğan Ş, Tuncer İ, Akbaba M (2004). Gynecologic examination findings and Pap smear screening results of women in Doğankent, Turkey. *Turkish J Public Hlth*, **2**, 85-91.

Özgul N (2010). The State of Cervical Cancer in Turkey and Cervical Cancer Screening Studies. In: Cancer Control in Turkey (Eds.Tuncer AM (chief), Ozgul N, Olcayto E, Gultekin M). Republic of Turkey, Ministry of Health, Pub. No.777, Ankara, pp.379-84. [http://www.calameo.com/books/000713529b152e4a796d3] Last accessed: 15 June 2012.

Saraiya UB (2003). Preventable but not prevented: the reality of cervical cancer. *J Obstet Gynaecol Res*, **29**, 351-9.

Stewart BW, Kleihues P (Eds) (2003). Cancers of the female reproductive tract. World Cancer Report, IARC and WHO. IARC Press, Lyon, France. [http://www.scribd.com/doc/2350813/World-Cancer-Report-2003-Stuart-e-Kleihues-WHO-e-IARC] Last accessed: 15 June 2012.

Stoler MH (2002). New Bethesda terminology and evidence-based management guidelines for cervical cytology findings. *JAMA*, **287**, 2140-1.

Talukder MS, Huq MH, Haque A (2002). Evaluation of 500 cases of Pap's test in Mymensingh. *Mymensingh Med J*, **11**, 26-8.

Turkish Ministry of Health (2007). Serviks kanseri taraması ulusal standartları. (National (Turkish) standards for cervical screening) (2007) [http://www.ism.gov.tr/indir/mevzuat/genelgeler/G_29052007_1.pdf] Last accessed: 15 June 2012.

Uysal A, Birsel A (2010). Knowledge about cervical cancer risk factors and pap testing behaviour among turkish women. *Asian Pac J Cancer Prev*, **10**, 345-50.

WHO (2004). The world health report 2004—changing history. Sadag Imprimerie, France.

Yang BH, Bray FI, Parkin DM, Sellors JW, Zhang ZF (2004). Cervical cancer as a priority for prevention in different world regions: an evaluation using years of life lost. *Int J Cancer*, **109**, 418-24.

Zemheri E, Koyuncuer A (2005). Servikal kanserlerin erken tanısında Pap testinin önemi. Sürekli Tıp Eğitimi Dergisi,14 (1):1-4. [http://www.ttb.org.tr/STED/sted0105/servikal.pdf] Last accessed: 15 June 2012.