

# Evaluation of 37,438 consecutive cervical smear results in the Turkish population

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## Abstract

**Introduction:** Retrospective evaluation of cervical smear results of women who attended our gynecology policlinics with various symptoms and discussion of the results in the light of the literature.

**Material and methods:** We performed a retrospective investigation on 37,438 Pap smear results of women who attended our hospital between January 2011 and December 2012 with a variety of symptoms.

**Results:** Average patient age was 43 (18–83) years. Of the Pap smear results analyzed, in 21,503 (57.4%) findings were within normal limits, while 153 (0.41%) showed epithelial cell abnormalities and 15,358 (41%) showed inflammation. Four hundred and twenty-four (1.1%) cases were reported to have inadequate Pap smear samples for evaluation. Of the epithelial cell abnormalities, 136 (88.8%) were squamous cell abnormalities and 17 (11.1%) were glandular cell abnormalities. Atypical squamous cells of unknown significance (ASCUS) were reported for 117 (0.3%) Pap smears, while other epithelial abnormalities included atypical glandular cells of unknown significance (AGUS) in 17 (0.05%) cases, low-grade squamous intraepithelial lesion (LSIL) in 8 (0.02%) cases, atypical squamous cells with possible high grade lesion (ASC-H) in 8 (0.02%) cases and high-grade squamous intraepithelial lesion (HSIL) in 3 (0.008%) cases.

**Conclusions:** Public awareness should be raised on the importance of Pap smear testing repeated at appropriate intervals in the prevention and early diagnosis of cervical cancer. Health education should become more widespread, and the importance of screening programs and regular check-ups should be emphasized more often on this issue in the media.

**Key words:** Pap smear, screening, cervical cancer.

## Introduction

Cancer is the second most common cause of death worldwide and is estimated to be the first in 2030 [1]. Cervical cancer is the second most common type of cancer among women worldwide; 50,000 new cases are reported, and 250,000 women die of cervical cancer each year [2]. According to a study that analyzed statistical data of 8 provinces in Turkey, published in 2003 by the Cancer Control Department of the Ministry of Health of the Republic of Turkey which can be seen as the closest data to represent the Turkish population, cervical cancer was the 10<sup>th</sup> in frequency in all women's cancers and its incidence was 4.76 per hundred thou-

sand. According to those figures, the incidence of cervical cancer in Turkey seems to be well below that of many countries which implement well-developed national screening programs [3].

The average age of cervical cancer patients at diagnosis is 51, peaking at two periods of age namely, 35–59 and 60–64 [4, 5]. A healthy sex life and regular screening are very important in the prevention of cervical cancer [1, 4].

The Pap smear test is of extreme importance in the early detection, and, accordingly, in the prognosis of cervical cancer. This test was developed in the 1950s by the Greek scientist Georgios N. Papanicolaou, whose name was given to the method of cervical cancer screening called “Pap smear”. Pap smear is a relatively inexpensive method. In the detection of cervical pathologies, conventional cytology was reported to have a sensitivity of 30–87% and specificity of 86–100%, while sensitivity and specificity of the relatively new liquid-based cytology were found to be 61–95% and 78–82%, respectively [6, 7].

In this retrospective study, we aimed to evaluate cervical smear results of women who attended our gynecology polyclinics with various symptoms and discuss our results in the light of the literature.

## Material and methods

We performed a retrospective investigation on 37,438 consecutive Pap smear results of women who attended our hospital between January 2011 and December 2012 with a variety of symptoms. After taking a cervical smear sample with a cytobrush, material was thinly spread on a single glass slide and fixed with a spray (AKAT spray) held at about 25 cm distance from the sample. Cytological evaluation of cervical smears taken from the patients was performed using the 2001 Bethesda grading system [8]. We included the first smear result of the same patient if she had taken multiple smears within 1 year.

### Statistical analysis

For statistical analysis, the SPSS 15.0 (Chicago, USA) software package was used. Smear results were expressed as numbers and percentages.

## Results

Average patient age was 43 (18–83) years. Of the Pap smear results analyzed, 21,503 (57.4%) reported findings within normal limits, while 153 (0.41%) included epithelial cell abnormalities and 15,358 (41%) included inflammation. Four hundred and twenty-four (1.1%) cases were reported to have inadequate Pap smear samples for evaluation. Of the epithelial cell abnormalities, 136 (88.8%) were

squamous cell abnormalities and 17 (11.1%) were glandular cell abnormalities. Atypical squamous cells of unknown significance (ASCUS) were reported for 117 (0.3%) Pap smears, while other epithelial abnormalities included atypical glandular cells of unknown significance (AGUS) in 17 (0.05%) cases, low-grade squamous intraepithelial lesion (LSIL) in 8 (0.02%) cases, atypical squamous cells with possible high grade lesion (ASC-H) in 8 (0.02%) cases and high-grade squamous intraepithelial lesion (HSIL) in 3 (0.008%) cases (Table I).

## Discussion

Cervical cancer is the second most common type of cancer among women worldwide; 50,000 new cases are reported, and 250,000 women die of cervical cancer each year [2]. The average age at diagnosis is 51 in cervical cancer patients, incidence peaking at two periods of age namely, 35–59 and 60–64 [4].

Initiation of sexual intercourse at an early age, multiple sexual partners, low socio-economic status, smoking, vitamin A deficiency, and human papillomavirus (HPV) infection are well-established risk factors for cervical cancer [9, 10]. In developing countries, the annual incidence of cervical cancer and cancer-related deaths are both higher than in developed countries where use of routine Pap smear screening has reduced rates of invasive cervical cancer [11, 12]. Thus, prevention and early treatment of cervical cancer are dependent on identification and elimination of variable risk factors, and implementing proper screening tests for appropriate age groups [13].

Cervical cancer screening should be initiated 3 years after the first sexual intercourse or at age 21. Pap smear screening should be performed once a year under the age of 30, while it should be repeated at least every 2–3 years in the case of 3 consecutive negative smear results in women over the age of 30 [14–16].

Conventional cytology was reported to have a sensitivity of 30–87% and specificity of 86–100%

**Table I.** Cervical smear results of the cases

Cervical cytology	Cases (n)	Ratio (%)
Normal	21503	57.4
Inflammation	15358	41
Inadequate material	424	1.1
ASCUS	117	0.3
AGUS	17	0.05
LSIL	8	0.02
ASC-H	8	0.02
HSIL	3	0.008

in the detection of cervical pathologies, while sensitivity and specificity of the relatively new liquid-based cytology were found to be 61–95% and 78–82%, respectively [5, 6]. In their study on 8100 subjects, Celik *et al.* aimed to compare liquid based cytology and conventional cytology, and found that although the frequency of reports denoting inadequate smear samples was reduced with the use of liquid-based cytology, there was no statistically significant difference between the two diagnostic methods in detecting atypical squamous cell and other epithelial cell abnormalities [17]. Conventional cervical cytology is the preferred method of cervical cytology evaluation in our center.

In their study evaluating 500 Pap smear samples, Talukder *et al.* reported that they identified inflammation in 82.8%, ASCUS in 0.6%, HSIL in 1.2% and squamous cell carcinoma in 0.2% of the samples [18]. Of the 6706 cervico-vaginal smears reported by Ozdamar *et al.*, 92.1% were benign, 0.7% were malignant, 0.8% were suspected to have a malignancy and 6.4% were inadequate to evaluate [19]. Aydin *et al.*, in a community-based cervical smear screening performed in Antalya province, reported that, of all the samples, 90.6% were reported as benign, 0.3% as ASCUS, 0.1% as LSIL, and 0.07% as HSIL [20]. In a study including 4122 cases, Bozkurt reported chronic non-specific inflammation in 90.5%, ASCUS in 4%, HSIL 0.1% and squamous cell carcinoma in 0.2% of the samples [21]. In a similar study Eroglu *et al.* reported chronic non-specific inflammation in 79.6%, ASCUS in 0.5%, LSIL in 0.02%, HSIL in 0.02% and squamous cell carcinoma in 0.02% of the samples [22]. Nazlican *et al.*, in their study including 150 cases, reported that 48.7% of the samples were normal while non-specific inflammation was identified in 24.0%, bacterial vaginosis in 13.3%, reactive changes secondary to inflammation in 12.7% and ASCUS in 1.3% [23]. In our study which included 37,438 cases, 57.4% of the samples were identified as normal while inflammation was detected in 41%, ASCUS in 0.3%, AGUS in 0.05%, LSIL in 0.02%, ASC-H in 0.02%, and HSIL in 0.008% of the samples. Pap smears reported as inadequate for evaluation constituted 1.1% of all samples. Early stage cervical cancer was detected in 1 case which was reported as ASC-H and in 2 cases which were reported as HSIL in Pap smear results. Our results are similar to the above-mentioned results of Aydin *et al.* and Eroglu *et al.* The rate of cytological diagnosis of ASCUS identified in our study was lower than those reported by Bozkurt and Nazlican *et al.* This fact may be due to differences among study groups for risk factors such as multiple partners and tobacco use, and number of cases included in the studies.

The Pap smear test is a cheap and easily applied screening test. Early diagnosis of cervical cancer can be made by routine Pap smear testing, and thus the incidence of cervical cancer and cancer-related death rates can be reduced.

Public awareness should be raised on the importance of Pap smear testing repeated at appropriate intervals in the prevention and early diagnosis of cervical cancer. Health education should become more widespread, and the importance of screening programs and regular check-ups should be emphasized more often on this issue in the media.

### Conflict of interest

The authors declare no conflict of interest.

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