

# Cytology Interpretations Of Cervical PAP Smears In Georgia

G Burkadze, G Turashvili

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## Abstract

We retrospectively analysed the results of 4188 PAP smears. There were 4128 (98.6%) abnormal smears. Normal smears were found in 20 (0.5%) patients, unsatisfactory smears in 40 (0.9%) patients. Out of 4128 abnormal Pap smears there were 3140 (76.1%) *Trichomonas vaginalis* infection, 2624 (63.6%) candidiasis, 312 (7.6%) bacterial vaginosis, 28 (0.7%) actinomyces, 68 (1.6%) *doderlein* cytolysis, 252 (6.1%) HSV infection, 30 (0.7%) intrauterine contraceptive device-induced changes, 44 (1.1%) glandular cells status posthysterectomy, 376 (9.1%) atrophic changes, 524 (12.7%) HPV infection, 708 (17.2%) CIN 1, 408 (9.9%) CIN 2, 88 (2.1%) CIN 3, 20 (0.5%) SCC in situ, 16 (0.4%) SCC, 264 (6.4%) atypical endocervical glandular cells, 304 (7.4%) endocervical glandular hyperplasia, 824 (20%) reserve cell hyperplasia, 144 (3.5%) squamous metaplasia, 68 (1.6%) tubal metaplasia, 188 (4.6%) microglandular hyperplasia, 60 (1.2%) Arias-Stella reaction, 10 (0.2%) endocervical adenocarcinoma. Cervical lesions are much more common in Georgia compared to the Western countries.

## INTRODUCTION

Cervical cancer is the second most common cancer in women worldwide after breast cancer, and in developing countries, the leading cause of death by cancer. It is one of the most preventable and curable of all cancers. Yet cervical cancer caused by infection with a sexually transmitted agent human papillomavirus (HPV), can be readily prevented by identifying and treating women with HPV-induced precancerous lesions of the cervix. The Pap smear is the standard screening tool used to test for the presence of abnormal cells that could become cancerous. A regular Pap smear provides an opportunity to detect pre-cancerous cells in the cervix. Cervical cancers in the early stage of development, or carcinomas in situ, are highly treatable because the cancer cells are located in a layer of cells in or around the cervix and have not spread to other parts of the body. Once the cancer cells spread (metastasize) to other parts of the body the disease is more difficult to treat and cervical cancer treatment becomes more complex (4).

The Pap smear, named for its inventor Dr. George Papanicolaou, is performed during a routine gynecological exam. The doctor gently scrapes cells from the cervix and "smears" them onto a glass microscope slide. These cells are highlighted with a staining procedure so they can be viewed under a microscope. If abnormal cells are present, further testing is required to rule out or positively diagnose cervical

caner (2, 3).

Three out of four women who develop cervical cancer each year have never had a Pap smear or not had one within the recommended two yearly intervals. Health professionals play an important role in encouraging women to have a Pap smear. Even if a woman is embarrassed about having a Pap smear, research has shown that most women will accept their doctor's advice about having one. Although the Pap smear has its limitations, it is the best way currently available for preventing the development of cervical cancer (1, 3).

According to the American College of Obstetricians and Gynecologists, Pap smears should begin at age 18 or as soon as a woman has had her first sexual encounter. Women should be screened at least every three years, although some experts recommend annual testing up to the age of thirty. Between the ages of thirty and seventy, women should consult their gynecologist regarding the frequency of screening necessary for them. Several years of negative testing may preclude the need for an annual Pap smear. Women who have any unusual symptoms, such as unexpected bleeding, discharge or pains, should see their doctor, even if their last Pap smear was normal.

The Bethesda System (TBS) for reporting cervical or vaginal cytological diagnoses was introduced in 1988 and revised in

1991 to establish uniform terminology and standardize diagnostic reports. In addition, it introduced a standardized approach for reporting if an individual specimen is adequate for evaluation. TBS 2001 was developed through a process that involved committee review of the literature, solicitation of expert opinions, and discussion of the proposed changes on an interactive Web site. The terminology of TBS 2001, which was adopted in May 2001, includes revisions in statements of adequacy, general categorization, and interpretation and results of epithelial cell abnormalities (Table 1). The American Society for Colposcopy and Cervical Pathology Consensus Conference subsequently developed guidelines for the management of cervical cytological abnormalities (6, 7).

## Figure 1

Table 1: The 2001 Bethesda System for Reporting Cervical Cytologic Diagnoses

|                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Specimen adequacy</b>                                                                                                                            |
| Satisfactory for evaluation                                                                                                                         |
| Presence or absence of endocervical or transformation zone components or other quality indicators such as partially obscuring blood or inflammation |
| Unsatisfactory for evaluation (specify reason)                                                                                                      |
| Specimen rejected or not processed (specify reason)                                                                                                 |
| Specimen processed and examined, but unsatisfactory for evaluation of epithelial abnormalities (specify reason)                                     |
| <b>General categorization (optional)</b>                                                                                                            |
| Negative for intraepithelial lesion or malignancy                                                                                                   |
| Epithelial cell abnormality                                                                                                                         |
| Other                                                                                                                                               |
| <b>Interpretation/result</b>                                                                                                                        |
| Negative for intraepithelial lesion or malignancy                                                                                                   |
| <b>Organisms</b>                                                                                                                                    |
| <i>Trichomonas vaginalis</i>                                                                                                                        |
| Fungal organisms morphologically consistent with <i>Candida</i> species                                                                             |
| Shift in flora suggestive of bacterial vaginosis                                                                                                    |
| Bacteria morphologically consistent with <i>Actinomyces</i> species                                                                                 |
| Cellular changes consistent with herpes simplex virus                                                                                               |
| Other non-neoplastic findings (optional to report)                                                                                                  |
| <b>Reactive cellular changes associated with:</b>                                                                                                   |
| Inflammation (includes typical repair)                                                                                                              |
| Radiation                                                                                                                                           |
| Intrauterine contraceptive device                                                                                                                   |
| Glandular cells status posthysterectomy                                                                                                             |
| Atrophy                                                                                                                                             |
| <b>Epithelial cell abnormalities</b>                                                                                                                |
| <b>Squamous cell</b>                                                                                                                                |
| Atypical squamous cells (ASC)                                                                                                                       |
| ASC of undetermined significance (ASC-US)                                                                                                           |
| ASC, cannot exclude high-grade squamous intraepithelial lesion (ASC-H)                                                                              |
| Low-grade squamous intraepithelial lesion (LSIL)                                                                                                    |
| Encompassing: human papillomavirus, mild dysplasia, and cervical intraepithelial neoplasia (CIN) I                                                  |
| High-grade squamous intraepithelial lesion (HSIL)                                                                                                   |
| Encompassing: moderate and severe dysplasia, carcinoma in situ, CIN 2, and CIN 3                                                                    |
| Squamous cell carcinoma                                                                                                                             |
| <b>Glandular cell</b>                                                                                                                               |
| Atypical glandular cells (AGC)                                                                                                                      |
| Specify endocervical, endometrial, or glandular cells not otherwise specified                                                                       |
| Atypical glandular cells, favor neoplastic                                                                                                          |
| Specify endocervical or not otherwise specified                                                                                                     |
| Endocervical adenocarcinoma in situ (AIS)                                                                                                           |
| Adenocarcinoma                                                                                                                                      |
| Other (list not comprehensive)                                                                                                                      |
| Endometrial cells in a woman 40 years or older                                                                                                      |

The aim of this study is to evaluate the abnormal cytological entities detected by cervical Pap smears and to discuss the

importance of Pap smears screening programs.

## MATERIALS AND METHODS

We retrospectively analysed the results of 4,188 PAP smears, which had been examined in a PAP smears laboratory (Department of Pathological Anatomy, Central Clinic of Tbilisi State Medical University) during 5 years (1998-2003). The mean age of the patients was from 18 to 79. All the patients had various complains including vaginal discharge, itching etc.

We examined the conventional cervical smears, which were fixed by 70% ethanol and stained by Pap method (SHANDON).

The clinical data were collected by gynecologists, including the exact day of menstrual cycle, age of the patient, previous treatment options and etc.

The cytological reports were made using Bethesda System 1994, 2001, including specimen adequacy, general categorization, interpretation/result, epithelial cell abnormalities and recommendations.

## RESULTS

There were 4128 (98.6%) abnormal Pap smears out of 4188 smears. Smears with categorization: "Negative for infections, intraepithelial lesion or malignancy" were found in 20 (0.5%) patients (i.e. normal smears), unsatisfactory smears for evaluation – in 40 (0.9%) patients.

Out of 4128 abnormal Pap smears there were 3140 (76.1%) *Trichomonas vaginalis* infection, 2 624 (63.6%) fungal organisms morphologically consistent with *Candida* species, 312 (7.6%) bacterial vaginosis, 28 (0.7%) *actinomyces*, 68 (1.6%) *doderlein* cytolysis, 252 (6.1%) herpes simplex virus (HSV) infection, 30 (0.7%) intrauterine contraceptive device-induced changes, 44 (1.1%) glandular cells status posthysterectomy, 376 (9.1%) atrophic changes, 524 (12.7%) human papillomavirus (HPV) infection, 708 (17.2%) cervical intraepithelial neoplasia grade 1, 408 (9.9%) cervical intraepithelial neoplasia grade 2, 88 (2.1%) cervical intraepithelial neoplasia grade 3, 20 (0.5%) squamous carcinoma in situ, 16 (0.4%) squamous cell carcinoma, 264 (6.4%) atypical endocervical glandular cells, 304 (7.4%) endocervical glandular hyperplasia, 824 (20%) reserve cell hyperplasia, 144 (3.5%) squamous metaplasia, 68 (1.6%) tubal metaplasia, 188 (4.6%) microglandular hyperplasia, 60 (1.5%) Arias-Stella reaction, 10 (0.2%) endocervical adenocarcinoma (table 2).

**Figure 2**

Table 2: The Cytological findings in cervical PAP smears

| Cytological changes                                              | Number of patients | %    |
|------------------------------------------------------------------|--------------------|------|
| Trichomonas vaginalis                                            | 3 140              | 76.1 |
| Fungal organisms morphologically consistent with Candida species | 2 624              | 63.6 |
| Bacterial vaginosis                                              | 312                | 7.6  |
| Actinomyces                                                      | 28                 | 0.6  |
| Doderlein cytolysis                                              | 68                 | 1.7  |
| HSV                                                              | 252                | 6.1  |
| Intrauterine contraceptive device-induced changes                | 30                 | 0.7  |
| Glandular cells status posthysterectomy                          | 44                 | 1.1  |
| Atrophic changes                                                 | 376                | 9.1  |
| CIN 1                                                            | 524                | 17.2 |
| HPV                                                              | 708                | 12.7 |
| CIN 2                                                            | 408                | 9.9  |
| CIN 3                                                            | 88                 | 2.1  |
| Carcinoma in situ                                                | 20                 | 0.5  |
| SCC                                                              | 16                 | 0.4  |
| Endocervical atypia                                              | 264                | 6.4  |
| Glandular hyperplasia                                            | 304                | 7.4  |
| Reserve cell hyperplasia                                         | 824                | 20   |
| Squamous metaplasia                                              | 144                | 3.5  |
| Tubal metaplasia                                                 | 68                 | 1.6  |
| Microglandular hyperplasia                                       | 188                | 4.6  |
| Arias-Stella reaction                                            | 60                 | 1.5  |
| Normal smear                                                     | 20                 | 0.2  |
| Total number of cases                                            | 4 188              |      |

Out of 4128 abnormal Pap smears there were 3454 (83.7%) infections, 450 (10.9%) reactive cellular changes, 1056 (25.6%) squamous cell abnormalities, 1852 (44.9%) glandular cell abnormalities.

Out of 3454 cases of infections there were 3140 (90.9%) Trichomonas vaginalis infection, 2624 (76%) fungal organisms morphologically consistent with Candida species, 312 (9%) bacterial vaginosis, 28 (0.8%) actinomyces, 68 (2%) doderlein cytolysis, 252 (7.3%) herpes simplex virus (HSV) infection.

Out of 450 cases of reactive cellular changes there were 30 (6.7%) intrauterine contraceptive device-induced changes, 44 (9.8%) glandular cells status posthysterectomy, 376 (83.6%) atrophic changes.

Out of 1056 cases of squamous cell abnormalities there were 524 (49.7%) human papillomavirus (HPV) infection, 708 (67%) cervical intraepithelial neoplasia grade 1, 408 (38.6%) cervical intraepithelial neoplasia grade 2, 88 (8.3%) cervical intraepithelial neoplasia grade 3, 20 (1.9%) squamous carcinoma in situ, 16 (1.5%) squamous cell carcinoma.

Out of 1852 glandular cell abnormalities there were 264 (14.3%) atypical endocervical glandular cells, 304 (16.4%) endocervical glandular hyperplasia, 824 (44.5%) reserve cell hyperplasia, 144 (7.8%) squamous metaplasia, 68 (3.7%)

tubal metaplasia, 188 (10.2%) microglandular hyperplasia, 60 (3.2%) Arias-Stella reaction, 10 (0.5%) endocervical adenocarcinoma (table 2).

## CONCLUSION

The randomized examination of cervical PAP smears in women with vaginal discharge showed that cervical infections, intraepithelial neoplasia of various grade and invasive cervical carcinoma are much more common in Georgia compared to the Western countries. The possible reason for this fact is the absence of cervical screening program, low social-economic status, lack of awareness of cervical cancer prevention on PAP smears. These results indicate that cervical screening program is necessary to estimate the actual magnitude of cervical carcinoma and its precursor lesions. Furthermore, it is possible to examine 35-50 years old women in low resource countries like Georgia.

## CORRESPONDENCE TO

Professor George Burkadze, M.D., PhD., M.Sc.D.  
20/55 Vazha-Pshavela Avenue, 380060 Tbilisi, Georgia.  
Phone: +995-99-578833

Dr Gulisa Turashvili, M.D.  
7 Asatiani Street, 0177 Tbilisi, Georgia.  
Phone: +995-99-903968

## References

1. Broder S. From the National Institutes of Health. Rapid Communication--The Bethesda System for Reporting Cervical/Vaginal Cytologic Diagnoses--Report of the 1991 Bethesda Workshop. JAMA 1992;267:1892.
2. Davey DD. Bethesda 2001: science, technology, and democracy join forces for patient care. Diagn Cytopathol 2002;26:135-6.
3. Kurman RJ, Solomon D. The Bethesda system for reporting cervical/vaginal cytologic diagnoses: definitions, criteria, and explanatory notes for terminology and specimen adequacy. New York, N.Y.: Springer-Verlag, 1994.
4. Mintzer M, Curtis P, Resnick JC, Morrell D. The effect of the quality of Papanicolaou smears on the detection of cytologic abnormalities. Cancer 1999; 87:113-7.
5. Solomon D, Davey D, Kurman R, Moriarty A, O'Connor D, Prey M, et al. The 2001 Bethesda System: terminology for reporting results of cervical cytology. JAMA 2002;287:2114-9.
6. The 1988 Bethesda System for reporting cervical/ vaginal cytological diagnoses. National Cancer Institute Workshop. JAMA 1989;262:931-4.
7. Wright TC Jr, Cox JT, Massad LS, Twiggs LB, Wilkinson EJ; ASCCP-Sponsored Consensus Conference. 2001 Consensus Guidelines for the management of women with cervical cytological abnormalities. JAMA 2002;287:2120-9.

**Author Information**

**George Burkadze, M.D., PhD., M.Sc.D.**

Professor, Department of Pathological Anatomy, Tbilisi State Medical University

**Gulisa Turashvili, M.D.**

Department of Pathological Anatomy, Tbilisi State Medical University