The Role of Rescreening in the Quality Control Program of Cervical Smear Reporting

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ABSTRACT

Introduction: The screening of cervical smears by a cytotechnician and a pathologist is a good way of avoiding false negatives. However, even in such cases, many cases may be missed. Rescreening helps in picking up the missed cases and improve the quality of reporting. Rescreening that is usually done is a rapid one and on 10% random cases. With this background the present study aims to rescreen consecutive cervical smears which were already screened and reported, to assess the role of rescreening as a quality control measure and to evaluate the intra observer variation during rescreening.

Material and Methods: 1000 consecutive cervical smears which were already screened by a cyto-technician and reported by a pathologist were rescreened by the same cyto-pathologist. Reporting format used was The Bethesda System 2001 (TBS 2001). Quality of reporting, that is, the number of new cases identified, was assessed and intra observer variation was calculated using k value.

Results: Total number of positive cases, including atypical epithelial cells, reported initially was 20. Rescreening helped in picking up 6 new cases. The intra observer agreement was 99.4% and k value was 0.87.

Conclusion: Rescreening indeed help bettering the quality of cervical smear reporting using TBS 2001. There was good intra observer concordance.

Keywords: Rescreening, Quality Assessment, Cervical Smears, Intra Observer Variability, k Value

INTRODUCTION

Cervical smear or Papanicolaou smear reporting is a screening technique for early detection of cervical cancers. The reporting methodology used worldwide is The Bethesda System 2001 (TBS 2001) of reporting on cervical smears.[1] Screening of smears by a cyto-technician and final reporting by a pathologist is the usual practice in most institutions and is a good way of avoiding false negatives. However, in spite of all precautions, false negatives do happen. Hence, a rescreening of smears helps in overcoming the problem of under diagnosis and in improving the quality of cervical smear reporting. In most studies done previously rescreening was either a rapid rescreening or a 10% random rapid rescreening of smears.[2-4]

Present study was undertaken to rescreen consecutive cervical smears which were already screened and reported, to evaluate the intra observer variation during rescreening and to assess the role of rescreening as a quality control measure.

MATERIAL AND METHODS

Present study was done in the Department of Pathology, Goverment Medical College, Trivandrum, Kerala. A total number of 1000 consecutive cervical smears stained using Papanicolaou (PAP) stain were included in the study. These were previously screened by a cyto-technician and reported by a pathologist using TBS 2001. All these smears were rescreened by the same cyto-pathologist taking a maximum of 6 minutes per smear. The history included the age group and hysterectomy status.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis. Descriptive statistics like total and mean was computed to interpret the data.

Statistical method followed was calculation of k value by studying intra-observer variability.

Observed value = true positives+ true negatives / total no of cases*100

Expected value= row total * column total/grand total of cases

k value = (observed value – expected value) / (100 – expected value)

RESULTS

The policy followed in our Institution comprises of an initial screening by a cyto-technician and final reporting by cyto-pathologist. Present study was taken up to identify under diagnosed cases which were missed during routine cervical screening programme. Consecutive 1000 cases were included regardless of the previous diagnosis. At the end of the study it was observed that initial reporting of these smears showed 20 positive cases. These included the atypical squamous cells, the "grey zone" and the high grade lesions including malignancies. Rescreening by the same cyto-pathologist identified 6 new cases, taking the total positive cases to 26. This was analyzed statistically for intra observer agreement and k value calculation. Intra-observer agreement was 99.4% and k value calculated was 0.87, which indicates high concordance rate [Table 1]. These values were also compared with similar studies [Table 2]. Most of the previous studies have been on random sampling. Present study, however, included consecutive cases, i.e. 100% sampling.

DISCUSSION

Cervical smears are taken to identify neoplastic lesions in the initial stages so that early diagnosis of cervical neoplasia can be made. However, due to technical and pathologic conditions in the patient, lesions are under diagnosed or missed all together. Papanicolaou stained smears are analyzed and reported according to TBS 2001 universally. TBS 2001 has incorporated these

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Lesions	Initial observation	Rescreening	Total cases (TP)
ASCUS	6	3	9
ASC-H	5	2	7
HSIL/SCC	9	1	10
Total	20	6	26

Table-1: Table showing intra observer variability

Lesions	Present study	Sood et.al[3]	Gupta et.al[5]
ASCUS	50%	23.5%	71.9%
ASCH	33.3%	5%	
HSIL/SCC	16.7%	14.4% (12.9%+1.5%)	2.6% (2.4%+0.2%)

Table-2: Table showing a comparison of present study to similar studies done previously. [Gupta et al have taken ASCUS and ASCH as a single entity.]

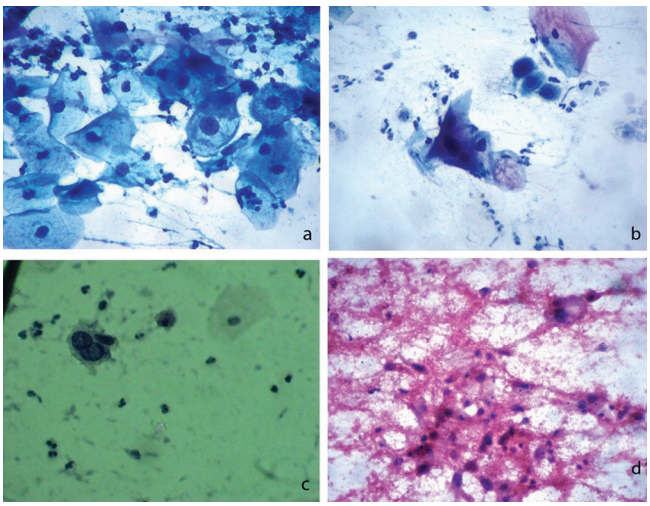

Figure-1: [a] Inflammatory smear showing a few cells with nuclear enlargement and uniformly distributed chromatin (PAP stain, 400X). [b] ASCUS-a few cells showing nuclear enlargement and mild anisonucleosis with small nucleolus in a relatively clean background (PAP stain, 400X). [c] ASCH-a few atypical cells with hyperchromatic nuclei, high N:C ratio, irregular nuclear membranes (PAP stain, 400X). [d] HSIL/SCC - Bloody smear showing a few cells with pleomorphism and hyperchromatic nuclei (PAP stain, 400X)

issues and are to be strictly followed while reporting. In spite of all precautions, lesions can be missed. Hence a rescreening may be undertaken to identify the fallacies. Most of the previous studies have been on rapid rescreening or a 10% random rapid rescreening of cervical smears.[2-7] Rapid rescreening involves screening each smear for a period of 1 minute at10X and a detailed study of suspected cases later. Random rescreening has the advantage of rescreening limited number of cases in a busy center. However, the limitations of random screening have been well documented.[8-11]

Most of the rescreening involves use of computer assisted facilities which is still way beyond for most laboratories in developing nations.[3,5,12]

Present study involved rescreening of consecutive 1000 smears by the same cyto-pathologist who had reported on these smears previously. This was by screening each smear taking a maximum of 6 minutes reporting the same using TBS 2001.

Presence of blood and inflammation which obscures >50% but <75% of the smear is considered unsatisfactory for evaluation due to obscuring factors and atypical cells can be missed (the false negative). Sometimes, some of these can still be picked up, if screened carefully. These may be of premalignant potential or they may be due to repair process (the false positive). Presence of atypical cells when the obscuring factors are negated constitutes the grey zone.

In the present study the initial reporting had picked up 6 cases of ASCUS, 5 cases of ASCH, and 9 cases of HSIL/SCC. At the time of rescreening, however the basic data provided was the age group and hysterectomy status, so as to categorize the cases as adequate or not according to TBS 2001. During rescreening, 6 new cases were identified and the same were reported to the treating physician. The discrepancy was at the ASC level [Table 1]. As has been observed time and again the interpretation of nuclear enlargement in the presence of inflammation can be very frustrating. [Figure 1 a, b]. So also picking up a few cells or an occasional cluster of atypical cells in a background of blood or inflammation is a difficult task [Figure 1 c, d]. Hence the period of screening for 6 minutes was used. There were 5 new cases of ASC including ASCUS and ASCH (50% and 33.33% resp.) [Table 1 and Table 2]. Only one new case of HSIL/SCC could be picked up on rescreening (16.7%) [Table 1, Table 2]. ASCUS constituted 0.9%, ASCH constituted 0.7% and HSIL/SCC constituted 1% of total cases in the present study. There was an intra-observer agreement of 99.4% and the k value calculated showed good concordance of 0.87. Intra observer variability has been mentioned as a cause of incorrect diagnosis.[13,14] Findings of the present study have been compared with those of Sood et al[3] and Gupta et al[5] [Table-2]. However, both the described studies were rapid rescreening. Moreover, Gupta et al[1] included ASCH with ASCUS as a single entity.

CONCLUSION

Hence, to conclude, 100% rescreening gives a good assessment of quality of cervical smear reporting. TBS 2001 should be strictly adhered to while reporting or rescreening. It is important to screen bloody or inflammatory smears allotting longer time period in order to pick up true positives.

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