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Experimental validation of a rapid staining method and digital cytology for cervical and anal cancer

Validação experimental de um método de coloração rápida e citologia digital para cancro ginecológico e anal

Paula M. Alves[1]; Fernando Jorge N. Ferreira[2]

1. Escola Superior de Saúde de Vale do Sousa (ESSVS), Portugal. 2. Instituto Universitário das Ciências da Saúde (IUCS), Portugal.

ABSTRACT

Cytology is used as detection and screening method of malignant and pre-malignant lesions showing their potential since the original works of Papanicolaou. The cytological smears are usually stained with the Pap staining, although this method is time consuming and requires different reagents. The aim of this study is to assess the quality of an original Blue staining in exfoliative smears comparing it with the standard Papanicolaou staining. The new Blue staining allows staining gynecological cytology with high quality standards at reduced cost and time when compared to the Papanicolaou method.

Key words: cytodiagnosis; vaginal smear; cells; cell biology.

INTRODUCTION

Cytology has been used as a method of detection and screening of malignant and pre-malignant lesions showing their potential since the original work of Papanicolaou[1].

Usually, the cytological smears are stained with the original Papanicolaou staining, despite of being time consuming and requiring a large amount of reagents[2, 3].

The aim of this study is to assess the quality of an original Blue staining in exfoliative smears to compare it with the standard Papanicolaou stain (**Figures 1** and **2**).

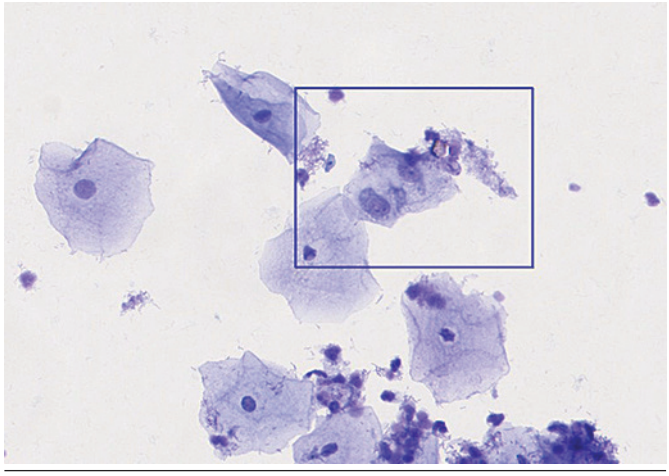

FIGURE 1 – *Blue stain method, 200×*

LSIL: low-grade squamous intraepithelial lesion.

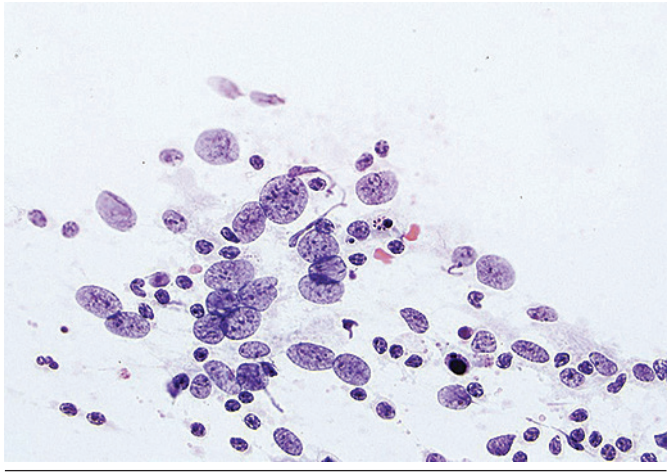

FIGURE 2 – *Papanicolaou method, 100×*

LSIL: low-grade squamous intraepithelial lesion.

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METHODS

In this study, we analyzed 800 samples of exfoliative cytology collected from the cervix. The cytological samples were selected randomly, two slides prepared from each patient simultaneously, in order to compare the two different staining methods. One of the smears was stained by standard Papanicolaou Staining and the other slide was stained by Blue staining. The staining composition described is based in a toluidine blue alcoholic solution. Toluidine blue diluted to 1% p/v in a 70% ethylic acid solution – for example, adding 1 g of toluidine blue to 100 ml of ethylic acid at 70%. In a more preferred embodiment of the composition object comprises 80%-99.5% p/v alcoholic base and 0.5%-20% p/v toluidine blue.

Procedures description:

- sample collection;
- sample placing on the slide as smear;
- slide drying in the air – 1 minute;
- composition application on the slide – 1 minute;
- quickly wash with running water;
- observation and reading.

RESULTS

In this study, the staining quality was compared in both methods and the diagnoses agreed in cases of difference in the matched pairs of smears, and the pathologists did not find difficulties in the interpretation of the Blue staining smears. Compared with the Papanicolaou staining, the time required to stain each set of slides was reduced from 20 to 3 minutes and costs were reduced by 70%.

CONCLUSION

Blue staining method allows staining cytology with high quality standards at reduced cost and time, when compared to the Papanicolaou method.

RESUMO

A citologia é utilizada como método de detecção e rastreio de lesões malignas e pré-malignas e mostra seu potencial desde os trabalhos originais de Papanicolaou. Geralmente, os esfregaços citológicos são corados com a coloração de Papanicolaou, apesar desse método exigir muito tempo e vários reagentes. O objetivo deste estudo é avaliar a qualidade de uma coloração original Blue Stain em esfregaços esfoliativos comparando-a com a coloração standard *de Papanicolaou. O novo método de coloração Blue Stain permite corar citologias ginecológicas com elevados padrões de qualidade a um custo e tempo reduzidos quando comparado com o método de Papanicolaou.*

Unitermos: *citodiagnóstico; esfregaço vaginal; células; biologia celular.*

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CORRESPONDING AUTHOR

Paula Melo Alves
Rua Central de Gandra, 1317; 4585-116; Paredes; Gandra, Portugal; e-mail: paulaapct@gmail.com.