Biomedical Laboratory Sciences

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BLS ACADEMY
BIOMEDICAL LABORATORY SCIENCE

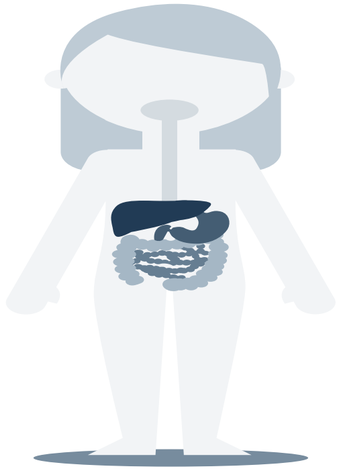
Clinical Case

BioTriCK

Cytology

Polytechnic of Coimbra

Clinical Information



55 years old, female patient went to the ordinary gynaecological appointment in a University Hospital.
It was requested a papanicolau test and HPV screening test.
The sample arrived at the Pathology Department and was directed towards the Cytology section.

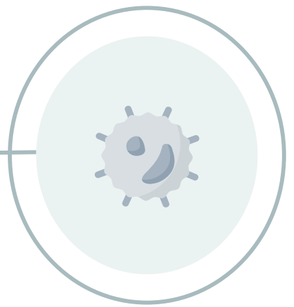
Laboratory Algorithm

Reception

Verification of Patient Credentials, type of sample, conditioning and Doctor requesition.

Papanicolau Test Screening

Pap smear processed by ThinPrep



HPV screening

Molecular screening of HPV variants detection through PCR.

ThinPrep

Fig.1 ThinPrep 5000 system accopled with the ThinPrep 5000 Autoloader.

The Thin Prep Test is run in the Thin Prep 5000 System is for use in screening for the presence of atypical cells, cervical cancer, or precursor lesions, as well as other cytologic categories as defined by the Bethesda System for Reporting Cervical Cytology, and is intended as a replacement for the conventional method of Pap smears.

Staining

We proceed to the staining section, here the slides go to the Sakura Tissue Tek Prisma (Sakura,Osaka, Japan) where they'll follow a Papanicolau staining protocol which consists of 3 dyes using Hematoxylin of Gill, Orange G and Eosin which allows the screener to analyse the celular details more thoroughly.

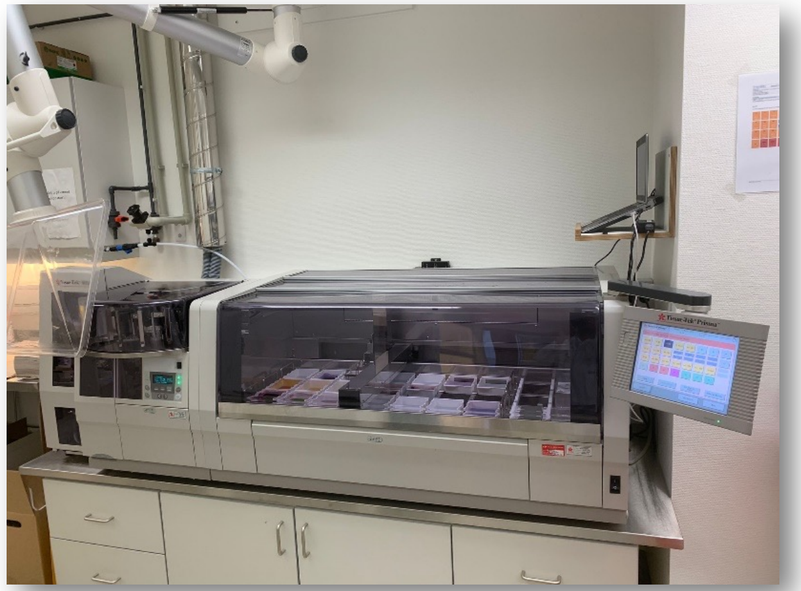


Fig.2 Sakura Tissue Tek Prisma.

Microscope Screening

After the staining is concluded, we proceed to the observation of the slide on the microscope.

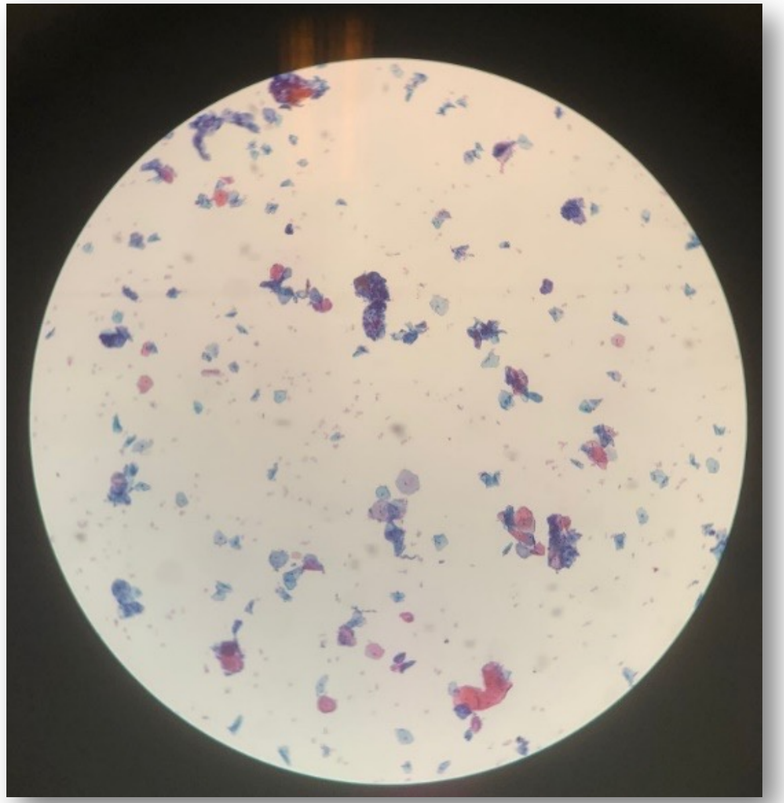


Fig.3 Sample slide analysis, superficial and intermediate cells.

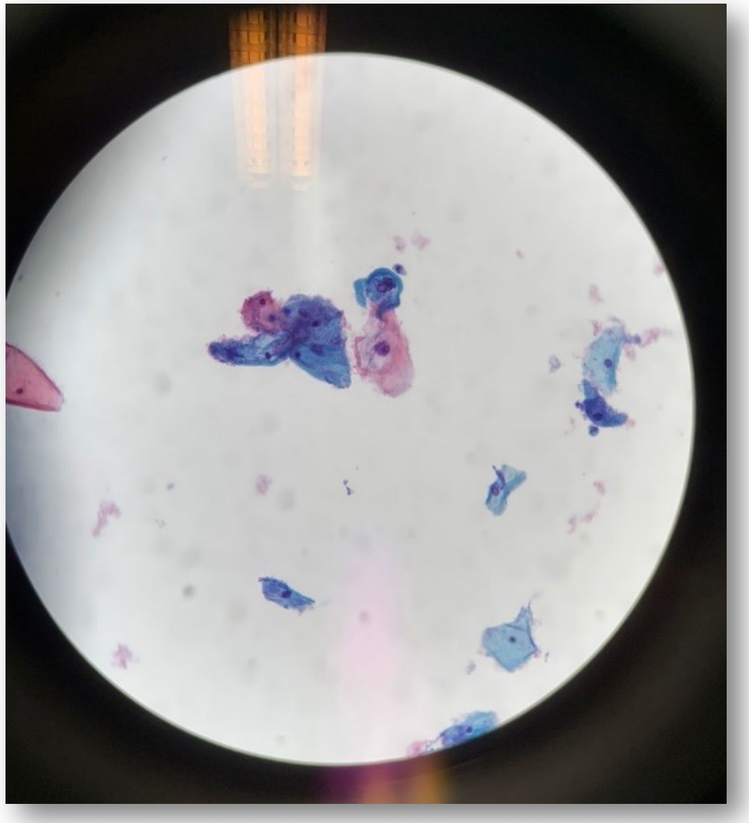


Fig.4 Sample slide analysis, koilocyte presence, LSIL.

HPV Screening

For the HPV Screening, we utilize the COBAS6800 an automated and integrated workflow to run PCR based Nucleic Acid Testing. It can detect the HPV16&18 and other types of HPV.

Fig.5 Pre analytical System COBAS Primer.

Fig.6 COBAS6800 Setup.

Discussion

Diagnostic

After analysing the results of the Pap smear and the HPV screening we have a diagnostic:

Low intrasuperficial lesion (LSIL) with HPV16 Infection

- Sample is representative, we can see cells from the transition epithelial zone
- Groups of pleomorphic superficial and intermediate cells with malignant characteristics
- Presence of koilocytes
- Positive results for HPV 16

LSIL

LSIL is the most common benign form of cervical intraepithelial neoplasia, it indicates mild dysplasia usually caused by HPV infection and usually resolves spontaneously within two years. Because of this, LSIL results can be managed with a simple "watch and wait" philosophy. However, because there is a 12–16% chance of progression to more severe dysplasia

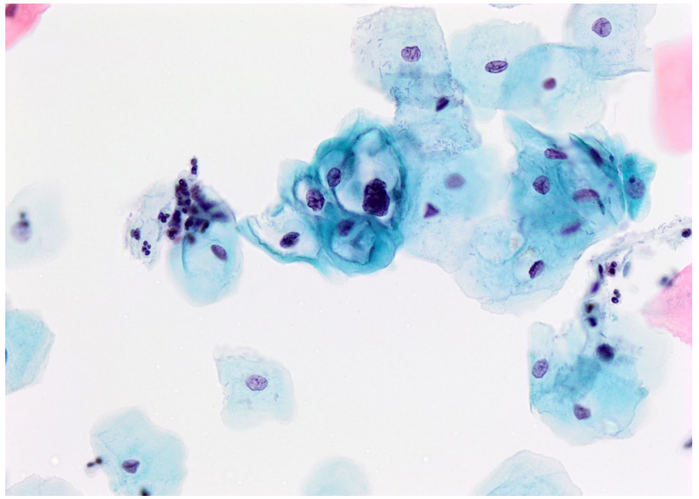


Fig.7 Example of an LSIL lesion, intermediate cells with hypercromasia.

HPV

HPV infection is caused by a DNA virus from the Papillomaviridae family. Most cervical cancer is due to HPV and mainly two types, HPV16 and HPV 18. It is believed to cause cancer by integrating its genome into nuclear DNA. Some of the early genes expressed by HPV, such as E6 and E7, act as oncogenes that promote tumour growth and malignant transformation by supressing the p53.

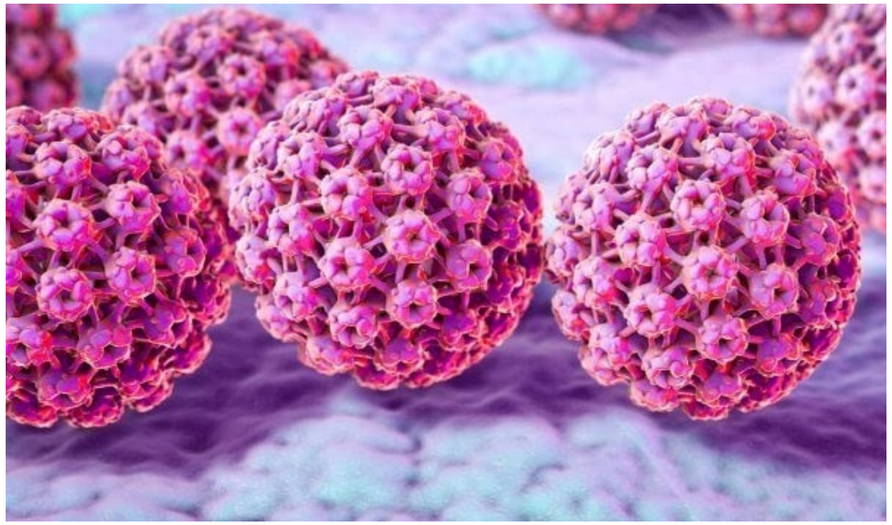


Fig.8 HPV Virus through eletronic microscopy.

Bibliography

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