

Telecytology: Distant Diagnosis and Quality Control with SMALL SIZE VIRTUAL SLIDE (SSVS)

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ABSTRACT –

OBJECTIVE: The study presents a novel collaborative system based on Small Size Virtual Slide (SSVS) technique and its suitability for telecytology diagnosis and quality control. SSVS is a low power acquisition system that digitises the whole slide and builds a virtual slide JPEG2000 10:1. Digital cytology slides of small size are reviewed through intranet or Internet as if they were seen under a microscope.

MATERIAL & METHODS: SSVS technique described by us was implemented in the TEXCAN-II®. The system was applied to distant diagnosis and quality control on 2 sets of slides of fluid and gynaecology smears, classified in five degrees of severity. The SSVS were accessed through a JPIP server technology. Five pathologists graded at a distance the cytology specimens for diagnosis and slide quality.

RESULTS: The results showed the degree of coincidental diagnosis at distance versus microscope diagnosis. Retrieving and transmission of images through intranet / Internet were significantly reduced compared to non-based JPEG2000 / JPIP collaborative telecytology tools, keeping the diagnostic quality of images.

CONCLUSION: The telecytology systems managed only by technical people provide a fast and accurate distant diagnosis and an online collaborative system. The SSVS technique is ideal since offers a framework to digitise cytology slides with a high compression rate, not affecting the diagnostic quality.

INDEX TERMS – Telecytology, Telemedicine, Small Size Virtual Slide, TEXCAN-II, JPEG 2000, JPIP server