

Comparison of e-mail and Centralized Telepathology

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BACKGROUND: Access to the Internet could be used for telepathology services through the world. Rare or other difficult cases may be requested for so-called second opinion. The aim of this study was to compare telepathology by e-mail and by telepathology center.

MATERIAL AND METHODS: At the Institute of Pathology, University of Nis, digitalization of microscopic pictures was made by Sony CCD RGB DXC-107P color camera. The captured images were converted into compressed JPEG format before sending. In the last two years, eighteen pediatric pathology cases and four tumor pathology cases were sent by e-mail to TPCC (Berlin, Germany).

RESULTS: In all cases second opinion obtained by telepathology was very useful. There were difficulties with cytological samples and with cases with inappropriate anamnestic data.

CONCLUSION: Picture transfer time was significantly faster by e-mail. On the other hand, telepathology center offers opportunity to obtain second opinion for more fields of pathology.

KEY WORDS: Telepathology; E-mail; Telepathology center

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INTRODUCTION

Each generation of pathologists has its own idea of the technology best suited for teaching the subject at all levels (1).

Telecommunications and computers are extensively used today in the practice of pathology and laboratory medicine. As telecommunications capabilities have expanded and become more generally available at lower costs and costs of telecommunication equipment and services have declined, health care professionals have begun to think about additional types of data, such as high-quality images, that might be transferred from one site to another for the purpose of improving the quality, speed, and efficiency of health care (2).

Clinical material, which in the past was given an expeditious if not always precise diagnosis, is now frequently subjected to a battery of immunohistochemical, cytogenetic, flow cytometric, and molecular analyses, in addition to conventional histologic staining. In many hospitals, surgical biopsy of tumors is preceded, and in

some situations supplanted, by fine-needle aspiration biopsy. In the absence of extensive inhouse testing procedures, interpretation of staining results relies to a degree on the recollection of the pathologist's of earlier experience, because adequate documentation in the literature might not be available when needed (3). The aim of this study was to compare telepathology by e-mail and by telepathology center.

MATERIAL AND METHODS

At the Institute of Pathology, University of Nis, digitalization of microscopic pictures was made by Sony CCD RGB DXC-107P color camera, at microscopes FXA (Nikon, Tokyo, Japan) and BX50 (Olympus, Tokyo, Japan). The captured images were converted into compressed JPEG format before sending. In the last two years, eighteen pediatric pathology cases and four tumor pathology cases were sent by e-mail to TPCC (Berlin, Germany)(Table 1).

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Table 1. Synopsis of transmitted data

Diagnosis	e-mail	TPCC
Soft tissue tumors	12	1
Lymphomas	3	2
Hepatic tumors	1	1
Cytologic samples	2	0

RESULTS

In all cases second opinion obtained by telepathology was very useful. There were difficulties with cytological samples and with cases with inappropriate anamnestic data.

The features of transmission are demonstrated in Table 2.

Table 2. Features of transmission

	e-mail	TPCC
Average transmission time	5.1±0.3 min	12.6±0.8 min
Average number of pictures	7.1±0.9	4±0.8
Without major difficulties	17(94%)	3(75%)
No final conclusion	2*	0

*Cytologic samples

CONCLUSION

Although many diagnostic tests and several imaging modalities are introduced into the health care system every year, the examination of small biopsies taken from nearly every part of the body without any major risk for the patient is still one of the medical techniques with the highest diagnostic sensitivity and specificity (4). Telepathology is defined as the practice of pathology at a distance, by visualizing an image on a video monitor rather than viewing a specimen directly through a microscope (2).

A correct histopathologic diagnosis depends upon several factors: correct sampling, adequate tissue processing, good staining qualities, detailed visual examination, and adequate knowledge on the part of the pathologist (4).

Childhood cancer is rare and represents about 1% of all cancers (5). Diagnosis and classification of childhood tumors requires special expertise, because of small numbers, differing methodologies, variations in age groups, and imprecise definitions. Therefore, the need to consult trained pediatric pathologist is increasing every year.

According to our results, picture transfer time was significantly faster by e-mail. On the other hand, telepathology center offers opportunity to obtain second opinion for more fields of pathology.

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