Use of Telepathology for Pathology Peer Review in Multinational Studies

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Introduction
Pathology peer review of toxicologic pathology findings in safety assessment studies of drugs, food additives and agrochemicals is commonly done prior to submission of test results to regulatory authorities. Following completion of pathologic evaluation of preclinical pathology findings, the actual slides are shipped to the peer review pathologist (PRP), or the PRP would travel to the study pathologist (SP) laboratory to view the histopathology slides with the SP using a computer monitor. The purpose of our study was to determine if new telepathology technologies can effectively be used for the peer review aspect of the preclinical study, and thus reduce need for travel and logistic expense.

Methods

Following completion of the pathology evaluation of preclinical toxicity studies at contract laboratories located in the U.S., Europe, and Australia, histology slides are shipped to the PRP located in Israel. The PRP then utilizes the novel telepathology system from his existing microscope in order to discuss histopathology diagnoses and reach a consensus, and thereby avoiding the need to travel to the SP site at the contract laboratories.

Experimental Design

Three recent examples of pathology peer review were carried out using this novel telepathology system.

The slides chosen for the peer review were those which had lesions which the PRP questioned or did not agree with the classification of the lesions provided by the SP.

The two pathologists would work to obtain a consensus while simultaneously viewing and discussing the selected slides as they were under the microscope. The PRP with the novel telepathology system would work normally during the telepathology session. This would include changing focal planes, switching objectives as needed for increased magnification.

Results

Within a timeframe ranging from 1-2 hours, multiple selected slides were reviewed. Participants could see the actual images projected from the microscope of the PRP, discuss the lesions, annotate, and save high resolution images on their computers. Upon completion of the slide review, the PRP prepared a “Live Telepathology Review Report” which documented the pathology findings with the study director and the sponsor, helping in instantly sharing the microscopic findings with the study director and sponsor, adding annotations and measurements (i.e., thickness of the granulation tissue), and documentation.

Conclusion

The novel telepathology system connected to an existing microscope presents a feasible, cost-effective, and practical method of consultation and peer review in biomedical research and preclinical studies. The technology further acts as a viable alternative to travel for pathology experts and can facilitate more informed decision making relating to study results and strategic business steps in the shorter period of time. In addition, the Augmentiqs telepathology technology facilitates good science by conveniently supporting informal and formal consultation and pathology peer review consistent with best practices of toxicologic pathology.

Impact Statement

Based upon our experience, telepathology showing the region of interest live from the microscope can be used for peer review, other GLP-compliant review applications, or for simple informal consultation. New technologies which can streamline pathologic review can increase with the adaptation of real-time telepathology, and the novel Augmentiqs system in particular. We believe that more data will accumulate from peer review sessions, pathology working groups and other formal consultations that can be supported by this telepathology technology.