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Ex vivo fluorescence confocal microscopy: prostatic and periprostatic tissues atlas and evaluation of the learning curve

Laura Bertoni, Stefano Puliatti, Luca Reggiani Bonetti, Antonino Maiorana, Ahmed Eissa, Paola Azzoni, Luigi Bevilacqua, Valentina Spandri, Shaniko Kaleci, Ahmed Zoeir, Maria Chiara Sighinolfi, Salvatore Micali, Giampaolo Bianchi, Giovanni Pellacani, Bernardo Rocco, Rodolfo Montironi. Virchows Arch. 2020 Apr;476(4):511-520. doi: 10.1007/s00428-019-02738-y. Epub 2020 Jan 6.

ABSTRACT

Ex vivo fluorescence confocal microscopy (FCM) is an optical technology that provides fast H&E-like images of freshly excised tissues, and it has been mainly used for "real-time" pathological examination of dermatological malignancies. It has also shown to be a promising tool for fast pathological examination of prostatic tissues. We aim to create an atlas for FCM images of prostatic and periprostatic tissues to facilitate the interpretation of these images. Furthermore, we aimed to evaluate the learning curve of images interpretation of this new technology. Eighty fresh and unprepared biopsies obtained from radical prostatectomy specimens were evaluated using the FCM VivaScope® 2500 M-G4 (Mavig GmbH, Munich, Germany; Caliber I.D.; Rochester NY, USA) by two pathologists. Images of FCM with the corresponding H&E are illustrated to create the atlas. Furthermore, the two pathologists were asked to re-evaluate the 80 specimens after 90 days interval in order to assess the learning curve of images' interpretation of FCM. FCM was able to differentiate between different types of prostatic and periprostatic tissues including benign prostatic glands, benign prostatic hyperplasia, high-grade intraepithelial neoplasm, and prostatic adenocarcinoma. As regards the learning curve, FCM demonstrated a short learning curve. We created an atlas that can serve as the base for urologists and pathologists for learning and interpreting FCM images of prostatic and periprostatic tissues. Furthermore, FCM images is easily interpretable; however, further studies are required to explore the potential applications of this new technology in prostate cancer diagnosis and management. Keywords: Atlas; Fluorescence confocal microscope; Learning curve; Prostate cancer. PMID: 31907606 DOI: 10.1007/s00428-019-02738-y Free article