

CONFOCAL ENDOMICROSCOPY

TAKING ENDOSCOPY TO A NEW LEVEL

PENTAX Medical Company's endoscopic systems are distinguished in the industry for their superior image quality. In its continuing endeavor to develop new technologies, PENTAX has taken endoscopy to a new level and into the world of Confocal Endomicroscopy. Confocal Endomicroscopy is a newly developed endoscopic technique that allows cellular and sub cellular viewing of the upper and lower GI tract. "For the first time, physicians can look beneath the surface at up to 1000 times magnification," according to Ralf Kiesslich, MD, Mainz University Hospital (Germany), a pioneer in Confocal Laser Endoscopy,

physicians were only able to base their diagnoses on surface examinations. "Because you can see to greater depths with the PENTAX system, you can also potentially explore diseases that cannot be recognized by normal video endoscopy. For example, collagenous colitis, which is normally only diagnosed with biopsies, can be seen under the surface of the epithelial cells with endomicroscopy. In addition, you can see bacteria, like h-pylori, or perhaps in patients with CMV colitis, you can see a distinct cell type. This will give you an earlier and faster diagnosis during endoscopy and could be advantageous to patients because you can immediately begin treatment."

The ability to acquire endoscopic views on the cellular and sub-cellular level in the upper and lower GI tract could potentially open up new areas of application for endoscopists. Clinical trials suggest that this emerging technology can provide significant advances in early diagnosis and treatment of conditions such as cancer or pre-cancer of the colon, ulcerative and microscopic colitis, Barrett's esophagus, H. pylori, celiac disease, GERD and NERD.

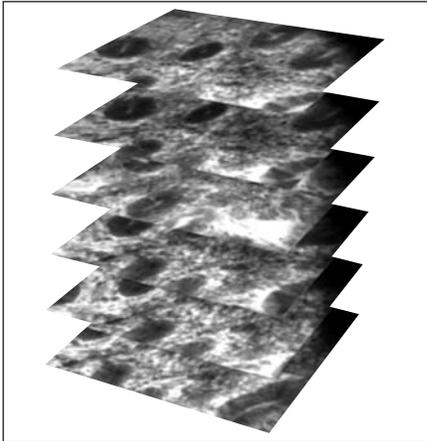
Dr. Kiesslich states that "with Confocal Endomicroscopy, you can see the in vivo architecture of the whole musocal layer at new depths, which allows you to visualize dysplastic changes even in deeper parts of the mucosal layer. Changes in cell and vessel architecture are the precursors of malignant transformation." Dr. Kiesslich notes that for many years physi-



Marsha Irene Canto, MD, MHS, Associate Professor of Medicine and Oncology, Johns Hopkins University (Baltimore, MD), agrees with Dr. Kiesslich, and says that "Confocal Endomicroscopy has the potential to reduce the need for obtaining conventional biopsy specimens. With the ability to view in vivo

histology, "targeted," rather than "random," biopsies could be performed and would provide more accurate specimens when conventional biopsy is indicated. Dr. Canto also says that "in the future you could take optical biopsies and only send the tissue sample for the area that look most suspicious to you, which could cut down the number of biopsies, the time of surveillance, the cost, and the time to diagnosis."

Dr. Canto believes some currently available advanced imaging techniques try to provide a suggestion for what is normal versus what is not



based on pattern recognition. "There are other technologies, such as fluorescence endoscopy and narrow band imaging, which allow you to potentially recognize normal from abnormal, different patterns of vasculature and patterns of mucosal cells and so forth. But the difference with the Confocal Endomicroscopy is that you can image the cells themselves rather than just seeing secondary clues that might relate to what's going on in the cells. It's sort of the nearest thing to real-time optical diagnosis, whereas other technologies have claimed to do that, but they actually don't."

Dr. Canto finds another potential clinical application of the technology will allow physicians and scientists to better understand the disease processes in vivo. "There are some things potentially down the line, such as molecular imaging in vivo and the study of blood flow that provide an even more exciting possible application for the future. Confocal Endomicroscopy can potentially not only complement, but provide a

whole new perspective to the understanding of normal physiology or disease itself."

The components of the confocal laser endoscope are based on the integration of a confocal laser microscope in the distal tip of a conventional video endoscope, which enables Confocal Microscopy in addition to standard video endoscopy. The combination of the two allows viewing of live, microscopic, in vivo changes and how tissue, blood flow, or bacteria on the surface interact.

Through an educational grant by PENTAX, the AGA and JSGE are jointly sponsoring the upcoming course entitled GI CANCER and the Endoscopist: A Brave New World of Imaging and Treatment, which covers the new frontiers of Confocal Endomicroscopy of the GI tract (www.gastro.org/education). In conjunction to the course, PENTAX is offering a unique workshop focusing



on Confocal Endomicroscopy. Registrants will participate in a combination of lectures, interactive workstations and video learning modules all focused on the emerging trends in Confocal Endomicroscopy. Enrollment is limited, so please register online at www.pentaxmedical.com.

For more information concerning PENTAX Medical Company, call 1-800-431-5880 or visit the company's Web site at www.pentaxmedical.com.

GI CANCER and the Endoscopist: A Brave New World of Imaging and Treatment

JANUARY 13-14, 2007

Hilton San Diego Mission Valley, San Diego, CA

HOTEL DEADLINE: December 19, 2006

PRE-REGISTRATION DEADLINE: January 5, 2007

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