Press Release

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Artificial intelligence: is this the future of early colorectal cancer detection?

(Barcelona, October 30, 2017) A new endoscopic system powered by artificial intelligence (AI) has today been shown to automatically identify colorectal adenomas during colonoscopy. The system, developed in Japan, has recently been tested in one of the first prospective trials of AI-assisted endoscopy in a clinical setting, with the results presented today at the 25th UEG Week in Barcelona, Spain1.

AI-assisted endocytoscopy – how it works
The new computer-aided diagnostic system uses an endocytoscopic* image – a 500-fold magnified view of a colorectal polyp – to analyse approximately 300 features of the polyp after applying narrow-band imaging (NBI) mode or staining with methylene blue. The system compares the features of each polyp against more than 30,000 endocytoscopic images that were used for machine learning, allowing it to predict the lesion pathology in less than a second. Preliminary studies demonstrated the feasibility of using such a system to classify colorectal polyps,2,3 however, until today, no prospective studies have been reported.

Prospective study in routine practice
The prospective study, led by Dr Yuichi Mori from Showa University in Yokohama, Japan, involved 250 men and women in whom colorectal polyps had been detected using endocytoscopy1. The AI-assisted system was used to predict the pathology of each polyp and those predictions were compared with the pathological report obtained from the final resected specimens. Overall, 306 polyps were assessed real-time by using the AI-assisted system, providing a sensitivity of 94%, specificity of 79%, accuracy of 86%, and positive and negative predictive values of 79% and 93% respectively, in identifying neoplastic changes.

Speaking at the Opening Plenary at UEG Week, Dr Mori explained; “The most remarkable breakthrough with this system is that artificial intelligence enables real-time optical biopsy of colorectal polyps during colonoscopy, regardless of the endoscopists’ skill. This allows the complete resection of adenomatous polyps and prevents unnecessary polypectomy of non-neoplastic polyps.”

“We believe these results are acceptable for clinical application and our immediate goal is to obtain regulatory approval for the diagnostic system” added Dr Mori.

Moving forwards, the research team is now undertaking a multicentre study for this purpose and the team are also working on developing an automatic polyp detection system. “Precise on-site identification of adenomas during colonoscopy contributes to the complete resection of neoplastic lesions” said Dr Mori. “This is thought to decrease the risk of colorectal cancer and, ultimately, cancer-related death.”
References

Notes to Editors
*Endocytoscope is a prototype endoscope provided by Olympus Corp.

For further information, or to arrange an interview with Dr Mori, please contact Luke Paskins on +44 (0)1444 811099 or media@ueg.eu

About Dr Yuichi Mori
Dr Yuichi Mori is an assistant professor of Digestive Disease Centre, Showa University Northern Yokohama Hospital, Yokohama, Japan. His research interest is on colonoscopy and developing computer-aided diagnosis for endoscopy.

About UEG Week
UEG Week is the largest and most prestigious gastroenterology meeting in Europe and has developed into a global congress. It attracts over 14,000 participants each year, from more than 120 countries, and numbers are steadily rising. UEG Week provides a forum for basic and clinical scientists from across the globe to present their latest research in digestive and liver diseases, and also features a two-day postgraduate course that brings together top lecturers in their fields for a weekend of interactive learning.

Register to attend UEG Week.

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UEG, or United European Gastroenterology, is a professional non-profit organisation combining all the leading European societies concerned with digestive diseases. Together, its member societies represent over 22,000 specialists, working across medicine, surgery, paediatrics, gastrointestinal oncology and endoscopy. This makes UEG the most comprehensive organisation of its kind in the world, and a unique platform for collaboration and the exchange of knowledge.

To advance standards of gastroenterological care and knowledge across Europe and the world, UEG offers numerous activities and initiatives, including:

- **25th UEG Week**, celebrate with us at our jubilee meeting, the biggest congress of its kind in Europe, and one of the two largest in the world
- **UEG Education**, the universal source of knowledge in gastroenterology, providing online and classroom courses, a huge online library and delivering the latest GI news, fostering debate and discussion
- **Activity Grants**, funding Live Educational Events, Online Courses and Standards & Guidelines Initiatives organised by UEG Member Societies and other providers.
- **UEG Journal**, 10 issues per year covering translational and clinical studies from all areas of gastroenterology
- **EU Affairs**, united for digestive health in Europe – prioritising Gastroenterology on the EU health agenda

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