A Comparison of Volumetric Laser Endomicroscopy (VLE) and Endoscopic Mucosal Resection (EMR) in Patients with Barrett’s Dysplasia or Intramucosal Adenocarcinoma

No registrations found.

Ethical review	Positive opinion
Status	Recruiting
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON29133

Source
NTR

Brief title
nVision EMR

Health condition

Barrett's esophagus
early neoplasia
advanced imaging

Barrett slokdarm
vroege neoplasie

Sponsors and support

Primary sponsor: AMC Amsterdam
Source(s) of monetary or material Support: Ninepoint Medical

Intervention

Outcome measures

Primary outcome

The primary endpoint will be the correlation of features seen on VLE images to those seen on histopathology from mucosal resection specimens.

Secondary outcome

The secondary endpoint will be the following: The creation of an image atlas, which will be used to determine the intra and inter observer agreement on VLE images in correlation with histopathology, resulting in refinement of the existing VLE image interpretation criteria and the validation of the VLE classification.

Study description

Background summary

Background of the study:

In patients with Barrett oesophagus (BO) malignant degeneration may occur through a series of phenotypic cellular changes detected and graded on microscopy; beginning with non-dysplastic intestinal metaplasia (IM), then low- (LGIN) and high-grade intraepithelial neoplasia (HGIN), and eventually early cancer (EC) may arise1,2. Endoscopic surveillance of patients with BO is, therefore, recommended to detect early neoplasia at a curable stage3. When using standard endoscopy, however, it may be difficult to distinguish areas with early neoplasia (i.e. HGIN a/o EC) within the normal Barrett mucosa4. Thus, in the absence of visible abnormalities random four-quadrant biopsies are obtained every 1-2 cm of the BO, to allow for histological evaluation for the presence of neoplasia (Seattle protocol)4,5. However, random biopsies are associated with a high rate of sampling error and may miss malignant lesions in the BO6. Moreover, the extensive biopsy protocol poses significant burden on the patient, the endoscopist and the health care system, due to prolonged endoscopy time and high costs. To increase the detection rate of early neoplasia during endoscopic surveillance of BO patients, different imaging techniques have been developed. In this respect, roughly two imaging goals have to be distinguished: first and foremost, suspicious lesions will have to be identified in the BO, which requires a “red flag” imaging modality with the ability to draw attention to a certain area of interest. Second, a differentiating tool will have to be able to distinguish between truly suspicious areas (i.e. HGIN/EC) or false positive areas. The N-Vision pVLE system is a newly developed diagnostic tool that will allow high resolution imaging of the oesophageal mucosa through Optical Frequency Domain Imaging (OFDI), a second generation Optical Coherence Tomography (OCT) technology. OFDI compares backscattered

light from tissue to a reference signal, which allows high resolution depth resolved imaging of the investigated tissue. In essence, OFDI is a kind of optical ultrasound imaging. The N-Vision probe based Volumetric Laser Endomicroscopy (pVLE) system incorporates OFDI in a rotating endoscopic probe, that allows for real-time, 3D high resolution imaging of the oesophageal mucosa. The N-Vision system can be used as an additional tool during standard surveillance endoscopy for Barrett's oesophagus or work-up of early neoplasia. The 3D mucosal map that is projected on the screen of the n-Vision system may identify suspicious areas that would otherwise have been overlooked by standard white light endoscopy. VLE is a new technique. Before it can be applied in the clinic, VLE imaging needs to be validated. Therefore, the VLE images have to be correlated to the histopathological features of the imaged tissue. A standardized, ex-vivo set-up will ensure spot-on correlation between the VLE images and the imaged tissue.

Objective of the study:

In patients undergoing surveillance endoscopy for Barrett's oesophagus or work-up and treatment for early neoplasia in Barrett's oesophagus we will evaluate the N-Vision pVLE system for the following items: 1) Correlating the VLE images with the corresponding histology of the biopsy specimen of Barrett's neoplasia in the oesophagus and in the endoscopic biopsy specimen. 2) Correlating the VLE images with the corresponding histology of the biopsy specimen of non-dysplastic Barrett tissue in the oesophagus and in the endoscopic biopsy specimen. 3) To define VLE image characteristics and develope a VLE classification system for the imaging of Barrett's oesophagus. 4) To creating a VLE imaging atlas with corresponding histology. 5) To optimize and validate the VLE classification by independent observers.

Study design:

Endoscopic procedure: During standard endoscopy for surveillance or work-up, the oesophagus will first be examined with white light endoscopy, recording all marks, distances and possible suspicious areas. Subsequently, the N-Vision probe will be deployed through the working channel of the endoscope, the balloon inflated and the inner lining of the oesophagus imaged. Areas suspicious for early neoplasia identified on the N-Vision 3D image will be recorded. Mapping with the N-Vision is followed by standard biopsies: all suspicious areas and random four-quadrant biopsies, as required by the official guidelines. The endoscopist will remove the system after performing this. If there is an abnormality, this will be marked by electrocoagulation according to the guidelines, followed by endoscopic resection of the abnormality by the Cap-technique according to the guidelines. When indicated, biopsies will follow of other (suspected) abnormalities. All abnormalities will be visualised with the N-Vision VLE system. After the procedure the biopsy specimen will be placed in an especially constructed mold and the second pVLE imaging will take place. Afterwards diagnostic work up will be done on the specimen by the pathology department. All histological evaluation is done by both a junior and a senior pathologist. All histology will be

reviewed by a GI-expert pathologist. The histological data will be correlated to the N-Vision data. These images and histology results will be used to create an image atlas and to develop and validate a VLE classification system for imaging and reviewing Barrett's mucosa and neoplasia in the oesophagus. The study will be done in 2 phases: 1) First phase is a single-centre pilot study, in which set up and logistics of the system will be optimalised, the VLE image characteristics will be defined and the VLE classification determined. In this phase,10 patients will be included: 5 patients with Barrett's oesophagus without dysplasia and 5 patients with an early neoplastic abnormality of Barrett's oesophagus. 2) In the second phase, 100 patients will be included in 5 centres; 20 patients per centre of which 5 with non-dysplastic Barrett patients and 15 patients with an early neoplastic abnormality of Barrett's oesophagus. In this phase, the image-atlas will be created and the VLE classification optimized and validated by indepent observers.

Study objective

The nVision pVLE system may be able to generate real-time, high-resolution mucosal maps of a large surface area of the esophagus, which may aid the endoscopist during surveillance endoscopy in real-time detection of suspicious lesions in patients with Barrett's esophagus.

Study design

VLE scanning takes place once in patients with a suspected neoplastic lesion. No other timepoints are applicable.

Intervention

The study uses the VLE catheter to examine and scan the distal Barrett's esophagus. VLE is an advanced imaging technique that has the potential to better visualize early neoplasia in Barrett's esophagus. This technique however, has not been validated yet, so in this study we're aiming to do so by performing one-on-one correlation of the VLE images with the corresponding histology from the EMR's. VLE, in other words, is not a treatment but a diagnostic technique. The intervention is that the balloon (containing the VLE catheter) will be guided through the working channel of the endoscope and will be brought into the distal esophagus where scanning is performed. These scan(s) take about 2 minutes each and 1-4 scans per patient will be performed, depending of scanning results. The procedure will take about 15-20 minutes longer than normal. After scanning an EMR is done to obtain the histological substrate of the VLE scans in-vivo as well as ex-vivo of the EMR specimen. There are two groups of patients: non-dysplastic Barrett's and dysplastic Barrett's. This way we can validate VLE in non-dysplastic Barrett's and dysplastic Barrett's.

Contacts

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Eligibility criteria

Inclusion criteria

1. Males and females over the age of 18 years;

2. Patients with either suspected or confirmed Barrett’s-associated dysplasia or intramucosal adenocarcinoma presenting for endoscopy likely requiring EMR;

3. Patients with non-dysplastic Barrett’s oesophagus;

4. Eligible for endoscopic resection of Barrett mucosa;

5. Ability to provide written, informed consent.

Exclusion criteria

1. Patients with a condition precluding full distension of the N-Vision balloon, such as strictures or a mass;

2. Inability to obtain biopsies and/or EMR (e.g. due to antocoagulation therapie, coagulation disorder, varices);

3. Eosophillic oesophagitis;

4. Oesophagitis > LA grade A;

5. Pregnancy;

6. Unable to provide signed informed consent.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Non controlled trial
Masking:	Open (masking not used)
Control:	N/A , unknown

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	10-05-2013
Enrollment:	110
Type:	Anticipated

Ethics review

Positive opinion

Date:	01-07-2013
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL3893
NTR-old	NTR4055
Other	NL43663.018.13 : MEC 2013/027
ISRCTN	ISRCTN wordt niet meer aangevraagd.

Study results

Summary results
N/A