endomicroscopy (pCLE) allows real time histological assessment of the esophageal epithelium. However, in the absence of visible lesions, random pCLE is, like biopsies, subject to sampling error. We therefore used autofluorescence imaging (AFI) as a red-flag technique followed by a comparison of different advanced imaging technologies in these areas. The aims of the study were to evaluate the diagnostic accuracy for dysplasia of pCLE and to compare pCLE with narrow band imaging (NBI) for the prediction of the dysplasia.

Methods 27 patients with BO have been recruited at a single tertiary referral centre (non-dysplastic BO n = 9, indefinite for dysplasia n = 2, BO with low grade dysplasia n = 8, BO with high grade dysplasia (HGD) n = 3, BO with intramucosal cancer (IMC) n = 5). Mean BO length was 8cm. AFI positive (AFI+) areas were identified and assessed by NBI-zoom and pCLE, according to previously published criteria. Targeted biopsies were taken from AFI+ areas as well as from random quadrantic locations. Correlation between imaging patterns and histological outcome was analysed in a per lesion analysis (AFI+ areas individually) and per patient analysis (overall histology). Differences between pCLE and NBI were analysed with Fisher's exact test.

Results In the per lesion analysis, sensitivity and specificity of pCLE were 100% and 67%, respectively, for a diagnosis of HGD/IMC and 69% and 78% for a diagnosis of any grade of dysplasia. pCLE had a significantly higher sensitivity for dysplasia ($P = 0.007$) than NBI, but a lower specificity ($p = 0.04$), due to a slightly higher false positive rate. In the per patient analysis the combination of AFI and pCLE had a sensitivity and a specificity of 100% and 47%, respectively for a diagnosis of HGD/IMC, and 100% sensitivity and specificity for a diagnosis of any dysplasia (Table 1). AFI+pCLE did not change the overall patient outcome compared to the Seattle protocol, but allowed identification and correct characterization of 4 additional areas containing HGD/IMC.

Conclusion pCLE can efficiently identify any grade of dysplasia. These preliminary data suggest that the combination of AFI and pCLE allows accurate in vivo diagnosis of dysplasia within BO. A larger study is warranted to determine whether this approach afford the potential to eliminate the necessity for multiple random biopsies during endoscopic surveillance.

Disclosure of Interest None Declared

PTU-157 HER2 POSITIVITY IN UPPER GASTROINTESTINAL TUMOURS IN A LARGE MULTI-CENTRE UK COHORT IDENTIFIES SIMILAR POSITIVITY RATES BUT DIFFERENT TRENDS THAN PREVIOUSLY REPORTED AND SUGGESTS NEW POTENTIAL AVENUES FOR HER2 THERAPIES

doi:10.1136/gutjnl-2013-304907.247

^{1,2}*M A Butt, ³M Gandy, ^{1,2}R J Haidry, ¹E S Bloom, ³S Mackie, ²M S Khan, ^{1,2}J Louis-Auguste, ⁴D Oukrif, ¹S-U-R Khan, ⁴R Saraswati, ^{1,2}M R Banks, ⁴M Rodriguez-Justo, ^{1,2}L B Lovat, ⁴M Novelli. ¹NMLC, UCL; ²GI services, UCH; ³UCL-AD, UCL; ⁴Pathology, UCH, London, UK

Introduction Evaluation of HER2 status is standard practise for people with inoperable locally advanced or recurrent and/or metastatic adenocarcinoma of the stomach or gastroesophageal

junction (GOJ). HER2 positivity is defined as a histology score of 3+, or 2+ with HER2 gene amplification. This study analysed gastroesophageal HER2 testing in UCL-AD over the past 2.5 years.

Methods All referrals for HER2 testing (n = 844) were reviewed. Data was captured for age (n = 367), sex (n = 320), tumour origin (n = 104), referring lab (n = 768), sample adequacy, HER2 grading (0-3+) and tumour type. Sections were immunostained with the Roche Tissue Diagnostics Pathway HER2 assay. For cases scoring 2+, F/DDISH testing was performed and the turn-around-time (TAT) from receipt to result analysed.

Results Cases were received from 61 labs, mean age 63yo (26-93yo, SD = 13) and the majority were men (71.5%). Specimens originated from oesophageal (OE) (33.7%), GOJ (13.5%), stomach (48%) and UGI metastases (4.8%). The majority (98.7%, n = 833) were HER2-graded. The tumour types were intestinal (INT) (49.6%, n = 257), diffuse (D) (29%, n = 150), mixed D/INT (14.3%, n = 74), carcinoma-in-situ (HGD/IMC) (6.4%, n = 33), squamous (Sq) and adenocarcinoma (ASq) (0.4%, n = 2 each). HER2 scores were 0 (44%, n = 366), 1+ (14.5%, n = 121), 2+ (18.8%, n = 156) and 3+ (22.7%, n = 189). Gene amplification of 2+ cases identified 124 (79.5%) negative, 23 (14.7%) positive and 9 (1.1%) unrecordable results. HER2 positivity (3+/2+&F/DDISH+) was noted in 10% (15/150) of D, 30.4% (78/257) of INT, 13.5% (10/74) of mixed D/INT, 54.5% (18/33) of HGD/IMC and in 50% (1/2) of Sq tumours. A TAT of < 5days was achieved in 97% of cases not requiring in situ, and < 10days in 97.5% requiring F/DDISH.

Abstract PTU-157 Figure

Conclusion Overall HER2-positivity rate was 25.8% in a cohort twice the size of the UK cohort reported in the benchmark ToGA trial. When compared with ToGA, subgroup analysis showed comparable but higher rates in D cancers (10% vs 6.1%), lower in both INT/mixed cancers (30.4/13.5% vs 32.2/20.4%), showed opposite proportions of GOJ/stomach cancers (28.6/31.3% vs 33.1/20.9%), and grouping proximal (OE+GOJ) cancers together, a higher ratio compared to stomach cancers was seen (0.51 vs 0.33). Positivity in

Abstract PTU-156 Table Sensitivity and specificity of NBI and pCLE on AFI positive areas for the overall diagnosis of HGD/EC and any dysplasia in patients with BE

	HGD/EC		p value pCLE vs NBI	Any dysplasia		p value pCLE vs NBI
	AFI+ NBI	AFI+ pCLE		AFI+ NBI	AFI+ pCLE	
sensitivity	83%	100%	ns	64.00%	100%	0.007
specificity	62.50%	47%	ns	75%	100%	ns

Sq cancer is of uncertain significance and warrants further research into new potential applications for HER2 targeting.

Disclosure of Interest None Declared

PTU-158 DNA PLOIDY ABNORMALITIES CORRELATE WITH INCREASING DEGREE OF DYSPLASIA IN CASES REFERRED TO A SPECIALIST CLINICAL IMAGE CYTOMETRY SERVICE FOR THE MANAGEMENT OF BARRETT'S OESOPHAGUS

doi:10.1136/gutjnl-2013-304907.248

¹D Oukrif, ^{2,3}M A Butt, ²E S Bloom, ^{2,3}R J Haidry, ²S-U-R Khan, ^{2,3}J Louis-Auguste, ³V Eneh, ¹M Rodriguez-Justo, ^{2,3}M R Banks, ¹M Novelli, ^{2,3}L B Lovat. ¹Pathology, UCH; ²NMLC, UCL; ³GI services, UCH, London, UK

Introduction In Barrett's oesophagus (BE), Barrett's dysplasia and esophageal carcinoma (EC) there can be genomic instability. This instability leads to DNA abnormalities, typically aneuploidy, where cells accumulate abnormal amounts of DNA. Tetraploidy is a specific term given to cells with twice the normal (diploid) content of DNA. In our specialist referral centre for BE, ploidy assessment is requested for cases with persistent or recurrent low-grade/indefinite for dysplasia (LGD/IFD), clinical suspicion of progression due for example to a strong family history of EC in long segment BE, or cases suspected to relapse after prior treatment for high-grade dysplasia/intramucosal cancer (HGD/IMC). This study aimed to assess correlation between dysplasia and DNA ploidy abnormalities (DNA-PA) in clinical cases with BE referred for ploidy assessment to the UCLH specialist image cytometry (IC) service.

Methods All clinical referrals for IC were retrospectively identified (n = 189) and reports from analysed blocks captured (n = 682). All samples were processed by a specialist IC technician to produce ploidy results with an automated image cytometric analyser. Ploidy histograms were then reviewed to confirm the automated IC result as diploid, aneuploid, tetraploid or equivocal. Histology was then reported or reviewed by an expert GI pathologist and scored as 1 (BE), 2 (IFD), 3 (LGD) or 4 (HGD).

Results Case referrals were received from 4 institutions, mean age was 58yo (24–85yo, SD 13) and the majority were men (79.9%). Corresponding histology was available in 69.7% (n = 475) of samples processed. DNA-PA positivity rates (Aneuploidy/Tetraploidy) in the sub-group with histology were 4% in BE (n = 376), 6.9% in IFD (n = 29), 29% in LGD (n = 31) and 51.3% in HGD (n = 39). Pearson product-moment correlation coefficient showed significant correlation between increasing degree of dysplasia and DNA-PA (Pearson r = 0.96, p = 0.039).

Abstract PTU-158 Figure

Conclusion This study has demonstrated that in our large case series DNA-PA's correlate with increasing degree of dysplasia. DNA-PA is a validated biomarker for cancer progression and has been used in our cohort to guide frequency of surveillance and in some LGD cases minimally invasive endoscopic therapy, where they otherwise would not have received it. Further longitudinal studies on the progression to cancer in our case series will provide further insight into this important biomarker.

Disclosure of Interest None Declared

PTU-159 CHARACTERISATION OF OESOPHAGEAL MUC1 EXPRESSION IN THE PROGRESSION TO OESOPHAGEAL ADENOCARCINOMA

doi:10.1136/gutjnl-2013-304907.249

^{1,2}M A Butt, ³D Oukrif, ^{1,2}R J Haidry, ⁴M Rashid, ¹S-U-R Khan, ¹H Pye, ¹E S Bloom, ⁵M Deonarain, ⁶D Swallow, ^{1,2}M R Banks, ³M Rodriguez-Justo, ³M Novelli, ^{1,2}L B Lovat. ¹NMLC, UCL; ²GI services; ³Pathology, UCH; ⁴Oncology, UCL; ⁵PhotoBiotics Ltd, ICL; ⁶Genetics, UCL, London, UK

Introduction Studies on oesophageal MUC1 expression have shown conflicting results. One found MUC1 in 100% of 52 oesophageal adenocarcinoma (OA) patient's using an anti-MUC1 antibody(1), whilst another found no expression in 23 OA cases at the RNA level(2). It is probable that detection of MUC1 repeat domains varies in the progression to cancer due to changes in glycosylation. This study aims to characterise oesophageal MUC1 expression using antibodies binding extracellular peptide repeats and an intracellular epitope unaffected by surface glycosylation.

Methods 138 paraffin embedded specimens were selected from 106 patients containing normal squamous (Sq; n = 34), normal gastric (G; n = 15), non-dysplastic Barrett's (NDBE; n = 27), low grade dysplasia (LGD; n = 22), carcinoma in-situ (HGD/IMC; n = 35) and invasive OA (IOA; n = 21). 11 IOA cases had matched specimens containing infiltrated lymph nodes (LN). Immunohistochemistry was performed using the antibodies CT2 (binding the MUC1 cytoplasmic tail)(3), NCL-MUC-1(binding the epitope PDTRPAP of the extracellular peptide) and HuHMFG1 (binding PDTR of the extracellular peptide). Intensity (0 to 3+) and extent (0; < 1% = 1; 1–10% = 2; 10–33% = 3; 33–66% = 4; > 66% = 5) of tissue staining was scored. Positive cases were defined as those staining 2+/3+ in > 10% of the pathology examined.

Abstract PTU-159 Figure

Results MUC1 was shown to be significantly expressed using our antibody panel (HuHMFG1; CT2; NCL-MUC-1) in Sq (61%; 38%; 40%), G (100%; 100%; 86%), NDBE (96%; 100%; 6%), LGD (91%; 86%; 12%), HGD/IMC (91%; 97%; 19%) and IOA (95%; 91%; 82%). 100% of the metastatic OA group with infiltrated LNs stained