Introduction

We have previously shown how the Allred scoring system may be used to semi-quantify expression of nuclear biomarkers in the Barrett’s (BE) to oesophageal adenocarcinoma (OA) sequence. Recently, a number of digital image analysis (DIA) platforms have been clinically validated for quantification of immunohistochemistry (IHC) in breast tissue. This study aims to compare pathologists scores (PS) with DIA for the quantification of nuclear biomarkers in BE to OA sequence.

Methods

Paraffin embedded specimens were selected from 34 patients. Pathology grade (PG) was scored as 1 (non-dysplastic BE; n = 5), 2 (low grade dysplasia; n = 11) and 4 (OA; n = 14). Sections were immunostained with antibodies PLK1-M, PLK1-L and Geminin. Intensity (I-PS) (0 to 3+) and extent (E-PS) (0; < 1% = 1; 1–10% = 2; 10–33% = 3; 33–66% = 4; > 66% = 5) of staining were scored by 2 GI pathologists, and mean PS calculated. Intensity and proportions of +ve staining were digitally quantified using Ariol® software. Analysis classifiers were trained to identify thresholds of positive (brown/DAB) and negative (blue/ Hx) nuclei (Figure A) in the areas of interest. Background tissue was digitally excluded. Mean intensity (I-DIA) and mean counts for DIA positive (red) and negative (green) nuclei (Figure B) were quantified to calculate percentage positivity (E-DIA) and compared with I-PS, E-PS and total Allred score (A-PS) using Pearson correlation coefficient.

Results

Significant correlation was seen between E-DIA and A-PS (r = 0.76, p = 0.006; r = 0.73, p = 0.008; r = 0.94, p = 0.0004) with all biomarkers (PLK1-M; PLK1-L; Geminin). PLK1-L showed additional correlation between DIA and PS for intensity (r = 0.985, p = 0.02) and extent (r = 0.95, p = 0.90). Geminin showed additional correlations between DIA and PS for extent (r = 0.99, p = 0.0008) and PG (r = 0.97, p = 0.03). Following training, Ariol® analysis took a mean of 4mins (Range 3–5) per tissue region high-lighted.

Conclusion

This study has demonstrated how DIA may be used to quantify expression of nuclear biomarkers. Significant correlation between DIA with Allred score was seen with all biomarkers, but only PLK1-L correlated with intensity and Geminin with PG. Background staining ignored by pathologists was found to be a confounder for DIA, particularly with PLK1-M. Nonetheless, DIA has great potential to enhance current grading and risk stratification systems for BE, and help select patients for targeted therapies dependent on biomarker expression.

Disclosure of Interest

None Declared
Introduction Eosinophilic oesophagitis (EO) is the diagnosis in 10–15% of dysphagic patients in European and American studies, most frequent in men aged less than 50 years. It is precipitated by allergy but the environmental exposure to flora very different. The genetic profile is similar (92% NZ European descent) with Age and Sex

Methods A retrospective review of 871 patients investigated by gastroscopy from 2006–11 at Dunedin hospital. Age, sex, endoscopic findings and whether biopsied were recorded from the endoscopy database. Histology was determined from the endoscopy report or equivocal cases reviewed by a consultant histopathologist. Sex and age differences were interrogated with chi-squared and P < 0.05 was considered significant.

Results Average age of all patients was 68.7 years, 57.1% male. Common diagnoses were normal (27.7%), oesophagitis (21.7%), cancer (11.2%), dysmotility (7.5%), peptic stricture (5.0%). 20 patients (12 male, mean age 45.5 years) had EO. 5 of these had endoscopic abnormalities (2 × ridges, 2 × Schatzki rings, 1 × furrows). 351 patients (40.9%) had oesophageal biopsies, but only 86 of 434 where the underlying cause was not evidence ie no cancer, oesophagitis or peptic stricture. EO incidence was 2.3% of all patients, 5.7% of those biopsied but 23.2% of those where an alternative diagnosis was not evident. Annual incidence varied from 1.1 to 4%. The frequency of biopsies was greater in 2011 (73.6%) than previous years were not sufficiently sensitive to depend upon. We would recommend eosinophilic biopsies in all patients presenting with dysphagia without obvious cause at endoscopy.

Disclosure of Interest None Declared

Abstract PTU-145 Table 1 Variation of Frequency of Biopsy and EO with Age and Sex

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Total</th>
<th>Biopsied</th>
<th>Eosinophilic oesophagitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 y.o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>497</td>
<td>224 (45.1%)*</td>
<td>12 (2.4%; 5.4% of those biopsied)</td>
</tr>
<tr>
<td>≥ 50 y.o</td>
<td>771</td>
<td>313 (40.6%)*</td>
<td>8 (1.0%; 2.6% of those biopsied)</td>
</tr>
</tbody>
</table>

*P < 0.05
**P < 0.0001

Conclusion EO appears less frequent in a New Zealand dysphagic population than in previous Northern hemisphere studies although this might be due to few biopsies where no macroscopic abnormality was seen. Biopsies are more frequent in men than women but EO no more likely. Biopsies are not more frequent in younger patients (< 50 y.o) but EO is much more frequent. The exact incidence of EO and reasons for discrepancies with previous studies merit further investigation.

Disclosure of Interest None Declared