

Abstract P157 Figure 1 Self-organising map discriminant index of healing (blue) vs. non-healing (red) in UC (a) and CD (b) demonstrating extracted spectral features

UC of 93.9%, 99.2%, 99.3%, 93.6% and 96.4% and 93.5%, 98.0%, 98.1%, 93.1% and 95.6% in CD respectively.

1a.

1b.

Conclusions We have demonstrated that Raman Spectroscopy can accurately differentiate MH from active inflammation in UC and CD and might be a future tool to direct precise therapeutic management in IBD.

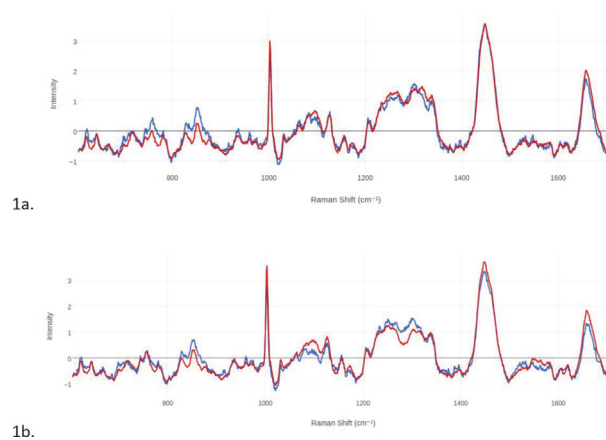
P158 **RAMAN SPECTROSCOPY DEMONSTRATES BIOMOLECULAR CHANGES AND PREDICTS RESPONSE TO BIOLOGICAL THERAPY IN INFLAMMATORY BOWEL DISEASE**

¹Samuel Smith*, ²Carl Banbury, ³Davide Zardo, ¹Rosanna Cannatelli, ¹Olga Nardone, ^{1,4}Uday Shivaji, ^{1,3,4}Subrata Ghosh, ²Pola Goldberg Oppenheimer, ^{1,3,4}Marietta Iacucci. ¹Institute of Translational Medicine, University Of Birmingham, UK; ²Chemical Engineering, University of Birmingham, UK; ³University Hospitals Birmingham NHS Foundation Trust, UK; ⁴National Institute for Health Research (NIHR) Birmingham Biomedical Research Centre, UK

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Introduction Biological therapy in the management of IBD is increasing however, response rates remain modest. Raman Spectroscopy describes the scattering of inelastic light giving spectra that is highly specific for individual molecules revealing tissue biochemistry. Our aim was to establish spectral changes in IBD following biological and whether Raman Spectroscopy can predict response to biological therapy.

Methods IBD patients who underwent endoscopic assessment pre- and 12 weeks post-biological therapy were recruited. Biopsies were taken for *ex vivo* Raman Spectroscopy analysis alongside biopsies for histological analysis. Response to treatment was defined when both a reduction in the endoscopic score of activity (UCEIS for UC and SES-CD for CD) and histological healing (defined as Nancy (0–1) in UC and modified Riley (0) in CD) was present. For spectral analysis we used artificial neural networks and a supervised learning model to demonstrate spectral differences and build predictive



Abstract P158 Figure 1 Self-organising map discriminant index of pre- and post-biological spectra of UC (a) and CD (b) demonstrating extracted spectral features

modelling, based on an 80:20% (network training: network testing) split of the data.

Results A total of 1800 Raman Spectra (18 patients-7 UC/11 CD) were analysed. Using data projection, there is clear separation between responder (3 UC and 3 CD) and non-responders (4 UC and 8 CD). The key spectral differences between pre- vs. post-biologic in responders are demonstrated using feature extraction (figure 1a & 1b). There was an increase at 1302 cm⁻¹ after biological therapy and when healing was achieved, which may indicate a potential biomarker of healing.

When comparing the pre-biological spectra, a machine learning algorithm is able to differentiate between responders from non-responders with a sensitivity, specificity, NPV and accuracy of 100.0% (95% CI 93.5–100.0), 92.3% (95% CI 83.0–97.5), 100.0% and 95.8% (95% CI 90.5–98.6) respectively in UC and CD.

Conclusion We have demonstrated changes in response to biological therapy and a potential biomarker for mucosal healing using Raman Spectroscopy, and can differentiate responders from non-responders in IBD. Using this modelling there is a potential to predict response to biological therapy, however prospective prediction will not need to take place before clinical application. To our knowledge, this is the first study demonstrating these changes.

P159 **IMPACT OF FAECAL INCONTINENCE ON HEALTH RELATED QUALITY OF LIFE IN INFLAMMATORY BOWEL DISEASE PATIENTS**

^{1,2}Duminda Subasinghe*, ³Nawarathna Mudiyansele Meththananda Nawarathna, ^{1,2}Dharmabandhu Nandadeva Samarasekera. ¹Department of Surgery, University of Colombo, Colombo, Sri Lanka; ²University Surgical unit, The National Hospital of Sri Lanka, Colombo, Sri Lanka; ³Department of Medical Gastroenterology, The National Hospital of Sri Lanka, Colombo, Sri Lanka

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Introduction To analyze the frequency and severity of faecal incontinence (FI) and its effect on the quality of life (QOL) in inflammatory bowel disease (IBD) patients.

Methods All patients who attended surgical and medical gastroenterology outpatient clinics in a tertiary care center with an established diagnosis of either ulcerative colitis (UC) or Crohn's disease (CD) over a period of 10 months