system consists of the MMPs and specific tissue inhibitors of metalloproteinases (TIMPs). Synthetic MMP inhibitors have been trialled with limited success. The study will determine the expression of MMP system components in colorectal tumour and pre-operative plasma samples and correlate these with tumour pathology and 15-year survival.
Methods: 100 paired tumour and normal tissue samples and 76 pre-operative plasma samples were analysed by ELISA for MMPs (-1, -2, -3, -7 and -9) and tissue inhibitors (TIMP-1, -2; ng/mg protein for tissue and ng/ml for plasma samples). Tissue and plasma levels were correlated with tumour pathology ($P<0.05$; Spearman's correlation coefficient) and 15-year survival analysis was performed (overall and disease-free; Kaplan Meier, $P<0.05$). The study had ethics committee approval.
Results: The levels of MMPs and TIMP-1 were all significantly greater in colorectal tumour tissue than the corresponding normal mucosa.
Tumour tissue levels of all MMPs correlated with Dukes stage and TIMP-1 with tumour depth. Preoperative plasma levels of TIMP-2 demonstrated a negative correlation with tumour differentiation.
Results of Kaplan Meier survival analysis found levels of active MMP-2 and MMP-9 in tumour tissue and MMP-7 in plasma samples significantly correlated with both overall and disease-free 15-year survival, with higher levels associated with poorer survival.
Conclusions: Tissue and pre-operative plasma levels of some MMP system components significantly correlated with the tumour histopathology, disease-free and overall 15-year survival.

35.
PHARMACOLOGICAL INHIBITION OF ACID CERAMIDASE; A NOVEL RADIOSENSITISER IN A 3D RECTAL CANCER MODEL

Rachael Clifford[1], Naren Govindarajah[1], David Bowden[1], Paul Sutton[1], Jason Parsons[1], Dale Vimalachandran[2]. [1] *The Institute of Cancer Medicine, The University of Liverpool, Liverpool, UK;* [2] *The Countess of Chester Hospital, Chester, UK*

Background: We have previously utilized proteomic and immuno-histochemical data to validate that high levels of acid ceramidase (AC) expression confers poorer neoadjuvant chemoradiotherapy response in rectal cancer. Biological (siRNA, plasmid) and pharmacological (Carmofur) AC manipulation validated altered responses of radiosensitivity in-vitro. LCL521, a novel small molecular inhibitor, specifically targets AC.
Methods: Optimal LCL521 dosing using standard ELISA activity assays with DMSO control was established in multiple colorectal cancer cell lines (HCT116, HT29, LIM1215). Western blotting confirmed altered expression of AC. Standard clonogenic assays assessed cell survival following increasing x-ray irradiation and change in spheroid volume to assess growth.
Results: ELISA revealed reduced expression of AC to 18% with 10μm LCL in HCT116, 12% HT29 and 30% LIM1215. 2-hour pre-treated clonogenic assays demonstrated reduced colony formation efficiency (colonies/number of cells plated−CFE) and improved radiosensitivity across cell lines. HT29 showed 0.758(CFE) control v 0.317(CFE) LCL at 1Gy, 0.441(CFE) control v 0.260(CFE) at 2Gy and 0.0250(CFE) control v 0.0119(CFE) LCL at 4Gy (p value=0.024). LCL521 dosing of spheroids improved radiosensitivity across cell lines (HCT116spheroid volume day 15 post-LCL521 $2.36x10^{-5}$mm v control $4.15x10^{-5}$mm).
Conclusions: Initial work demonstrates that pharmacological inhibition of AC with LCL521 produces comparative radiosensitizing effects in-vitro with these cell lines. This work further solidifies acid ceramidase as a potential therapeutic biomarker, however further work is needed to recapitulate these findings in more complex organoid models and ultimately in-vivo to establish a translatable clinical role in this setting.

36.
ACID CERAMIDASE AS A POTENTIAL BIOMARKER FOR LOCALLY ADVANCED RECTAL CANCER; IS APOPTOSIS THE MECHANISM?

Rachael Clifford[1], Naren Govindarajah[1], David Bowden[1], Paul Sutton[1], Jason Parsons[1], Dale Vimalachandran[2]. [1] *The Institute of Cancer Medicine, The University of Liverpool, Liverpool, UK;* [2] *The Countess of Chester, Chester, UK*

Background: We have previously utilized proteomic and immuno-histochemical data to validate that high levels of acid ceramidase (AC) expression confers poorer neoadjuvant chemoradiotherapy response in rectal cancer. Biological (siRNA knockdown, plasmid over-expression) and pharmacological (Carmofur, LCL521) AC manipulation validated altered responses of radiosensitivity in-vitro; further solidifying the potential of AC as a therapeutic biomarker through unknown mechanism.
Methods: siRNA AC knockdown was achieved in multiple colorectal cancer cell lines (HCT116, HT29, LIM1215), with non-targeting siRNA control, prior to irradiation. Cleaved PARP-1 fragments were detected and quantified using western blotting. Cell cycle analysis was performed using Attune NxT Flow Cytometry and propidium iodide staining (PI). Progressive apoptosis stage detection was achieved combining a PI and Annexin V stain.
Results: Western blotting confirmed increased PARP-1 cleavage fragments for siRNA AC across radiation doses compared to control (4.8-8.2fold increase ($p=<0.05$)). These findings were reproduced with treatment with AC inhibitor Carmofur. Cell cycle analysis demonstrated a pre-GO/1 spike compared to control; also potentially indicative of apoptosis. Annexin V staining showed a significant increase in cells of all stages of apoptosis at both 8 and 24hours post-irradiation.
Conclusions: Initial work suggests that AC expression may be linked to cell apoptosis post-irradiation. With much needed potential predictive or therapeutic biomarkers for rectal cancer, AC may be able to act as a target to improve response to neoadjuvant chemoradiotherapy and allow tailored treatment. Further work to fully understand the underlying mechanism is required to establish a clinical role.

75.
IS ONCOPLASTIC BREAST CONSERVING SURGERY ONCOLOGICALLY SAFE? A META-ANALYSIS OF 18,163 PATIENTS

Sebastian Kosasih, Salim Tayeh, Abdul Kasem, Kefah Mokbel. *The London Breast Institute, The Princess Grace Hospital, London, UK*

Background: The role of oncoplastic breast conserving surgery (OBCS) is that of a middle ground between standard breast conserving surgery (SBCS) and mastectomy - it allows adequate resection margins of tumours unsuitable for traditional breast conserving surgery whilst allowing for a better cosmetic outcome and a reduced morbidity rate when compared to a traditional mastectomy. However, due to this being a relatively new type of procedure, there is limited evidence on its oncological safety.
Methods: This study aims to compare oncological safety of OBCS with SBCS and mastectomy by examining the relative risk of cancer recurrence and re-operation rates. Literature search of Pubmed and Web of Science databases was conducted. Meta-Analysis was performed using R Statistical Software (www.r-project.org).
Results: 19 studies including 18,163 patients were included in the analysis. For the primary outcome measure of recurrence there was found to be no significant difference between the OBCS and SBCS or mastectomy (RR 0.861; 95% CI 0.640-1.160; $p<0.296$). The secondary outcome measure of re-operation was initially found to be significant in favour of OBCS (RR 0.64; 95% CI 0.46-0.89; $p<0.01$), however after adjustment for publication bias this was attenuated to an insignificant difference between the two study groups (RR 0.86; 95% CI 0.56-1.31; $p>0.05$).
Conclusions: For both recurrence of cancer and re-operation rate, there was not found to be a significant difference between OBCS and techniques that are more traditional. This would suggest that OBCS is of comparable oncological safety to more established operations and a useful option in suitable patients.

79.
ROLE OF BONE SCINTIGRAPHY IN ADDITION TO CT SCAN IN THE DETECTION OF BONE METASTASIS IN ADVANCED BREAST CANCER

Shaukat Mahmood Mirza, Raiz Masood, Daniel NG, Kathryn Barclay. *North West Anglia NHS Foundation Trust (NWAT), Peterborough, UK*

Background: The NICE guidelines (CG 81: 1.1.2& 1.1.3) updated in 2017; in spite of the above guidance, the current policy for detection of bone metastatic is not uniform in the entire country (UK), some centres count on staging CT of the chest, abdomen and pelvis (CT CAP) only but many still

performs both staging CT and bone scintigraphy. The main aim of this study is to evaluate whether the additional bone scintigraphy have any impact on treatment planning.
Methods: All stage II & III breast cancer patient who underwent both staging CT CAP and bone scintigraphy less than 03 weeks apart as a routine initial staging as per MDT decision in our hospital were identified retrospectively from the patient 's electronic record and MDT notes. The outcome of CT-CAP and bone scan results in reference to bone metastasis were compared and MDT outcomes recorded.
Results: A total of 360 patients records were reviewed, 261 patients were found eligible for inclusion in this study. A total of 32 patients were found to have bone metastasis, out of which 26 (9.9%) patients were identified on both imaging modality. While, 04(1.53%) additional patient were found to have bony metastasis on CT CAP missed by bone scan and bone scintigraphy only identified 02(0.76%) patients with bone metastases not found on CT CAP.
Conclusion: The bone scintigraphy for initial staging does not have material impact on treatment planning rather omitting this will have massive cost saving without any significant bearing on patients treatment.

Abstracts for Alan Edward Poster Prize 17th-18th November 2019

11.

EVALUATING THE LONG-TERM OUTCOMES FOR BONE HEALTH FOR OESTROGEN RECEPTOR POSITIVE BREAST CANCER WITH THE USE OF AROMATASE INHIBITORS

Bhamini Vadhwana, Caroline Mortimer. *Ipswich Hospital NHS Trust, Ipswich, UK*

Background: Aromatase inhibitors (AI) are commonly used for adjuvant treatment for oestrogen receptor positive post-menopausal breast cancer (ERBC). AIs are associated with increased fracture risk and may create a bone microenvironment favourable for tumour growth. The aim was to assess long-term outcomes in post-menopausal ERBC patients initiated on AI's in conjunction with vitamin D, calcium supplements or bisphosphonates for fracture risk and bone metastatic rate.
Methods: Post-menopausal ERBC patients previously assessed for bone health at commencement of their AI adjuvant breast cancer 10 years ago were invited for a follow-up interview. A questionnaire collated information regarding recent fractures, use of bisphosphonates, vitamin D or calcium supplements and bone disease. Recent blood tests for calcium, 25-hydroxyvitamin-Dand parathyroid hormone were performed. Fractures and metastatic bone disease were correlated with blood test results.
Results: 80 patients were included with a mean age of 77 years (IQR: 71-83). This study demonstrates a fracture risk of 13.8% over the ten-year period (11/80) with 6.2% diagnosed with osteopenia or osteoporosis on a new DXA scan (5/7). Bone metastatic rate and breast cancer-related death was 6.3% (5/80). 88.8% of patients (71/80) did not develop bone metastases and are continuing to have a disease-free survival.
Conclusion: Breast cancer related bone metastatic rate is lower than expected and may be attributable to use of bone supplements in the adjuvant treatment period. Further longitudinal studies are needed to establish if bone protection is required for a period of time longer than AI use to reduce this risk further.

14.

DIAGNOSTIC YIELD OF MALIGNANCY AND COELIAC DISEASE IN BIOPSIES AT UPPER GASTROINTESTINAL ENDOSCOPY IN PATIENTS WITH IRON DEFICIENCY ANAEMIA (IDA)

Stephen Stonelake, Jessica Wilkinson, Sevim Gulmez, Edmund Leung. *Hereford County Hospital, Hereford, UK*

Background: The British Society of Gastroenterology (GI) recommends upper and lower GI endoscopy in patients with IDA to investigate malignancy or coeliac disease. If coeliac serology is negative, small-bowel biopsies need not be performed unless there are clinical features of coeliac disease.
Methods: Patients undergoing oesophagogastroduodenal (OGD) endoscopy between October 2018-March 2019 for IDA were identified. Investigations for anaemia, coeliac disease and the number and location of GI biopsies were collected.
Results: There were 197 patients identified. Mean age was 67 years, male to female ratio of 60:137. Mean haemoglobin and ferritin was 106 g/l and 19 ng/ml respectively. There were 13, 8, 197, 1 and 30 oesophageal, gastric, duodenal, ileal and colorectal biopsies respectively. Twelve of 21 specified colorectal biopsies were from the right colon (57%). Eight (4%) patients had histologically confirmed Barrett's. Ten and 5 (8%) patients had colorectal dysplasia or adenocarcinoma respectively. One hundred and fourty-four (73%) patients had tTG levels tested. All 197 patients had duodenal biopsies regardless of the tTG result, which was positive in 6 patients. No patients with a negative tTG was found to have coeliac disease on histology. tTGA was 100% sensitive and specific for coeliac disease. One hundred and twenty-two (62%) had an inappropriate biopsy according to the BSG guidelines.
Conclusion: Diagnostic yield for pre-malignancy/malignancy at upper and lower GI endoscopy was 4% and 8% respectively. One hundred and twenty-two unnecessary duodenal biopsies were performed in patients who had negative tTGA levels prior to endoscopy.

16.

THE IMPACT OF INTRA-OPERATIVE CELL SALVAGE DURING OPEN RADICAL PROSTATECTOMY

Ned Kinnear[1], Bridget Heijkoop[1], Lina Hua[1], Derek Hennessey[2], Daniel Spernat[1]. [1] *The Queen Elizabeth Hospital, Adelaide, Australia;* [2] *Craigavon Area Hospital, Portadown, UK*

Background: To examine the effect of intra-operative cell salvage in open radical prostatectomy.
Methods: In this retrospective cohort study, all patients undergoing open radical prostatectomy for malignancy at our institution during 10/04/13 – 10/04/17 were enrolled. Patients were grouped and compared based on whether they received intra-operative cell salvage (ICS). Primary outcomes were allogeneic transfusion rates, and disease recurrence. Secondary outcomes were complications and transfusion-related cost.
Results: 59 men were enrolled. 30 used no blood conservation technique, while 29 employed ICS. There were no significant differences between groups in age, pre- or post-operative haemoglobin, Charlson comorbidity index, operation duration or length of stay. Tumour characteristics were also similar between groups, including pre-operative prostate specific antigen, post-operative Gleason score, T-stage, nodal status and rates of margin positivity. Compared with controls, the ICS group had longer follow up (945 vs. 989 days; p=0.0016).
The control and ICS groups were not significantly different in rates of tumour recurrence (6 vs. 3 patients; p=0.30) or complications (10 vs. 5 patients; p=0.16). While the proportion of patients receiving allogenic transfusion was similar (9 vs. 6 patients; p=0.41), fewer red blood products transfused (40 vs. 12 units) meant transfusion related costs were lower in ICS patients (AUD $47,666 vs. $37,429).
Conclusions: ICS reduced transfusion related costs, without affecting allogeneic transfusion rates, tumour recurrence or complication rates. These findings extends the literature supporting ICS in oncological surgery. Prospective randomised studies are needed to confirm the existing level III evidence.

17.

THE IMPACT OF INTRA-OPERATIVE CELL SALVAGE DURING OPEN NEPHRECTOMY

Ned Kinnear[1], Lina Hua[1], Bridget Heijkoop[1], Derek Hennessey[2], Daniel Spernat[1]. [1] *The Queen Elizabeth Hospital, Adelaide, Australia;* [2] *Craigavon Area Hospital, Portadown, UK*

Objective: To assess the impact of intra-operative cell salvage on outcomes in open nephrectomy.
Methods: A retrospective cohort study was performed of all patients undergoing open nephrectomy for suspected malignancy during 1 October 2013–1 October 2017. Patients were grouped and compared based on whether they received intra-operative cell salvage (ICS). Primary outcomes