periampullary cancer in order to determine the most promising targets for tumor-specific image-guided surgery.

**Materials and methods:** We constructed tissue microarrays from 107 resected pancreatic ductal adenocarcinomas and 61 resected periampullary (i.e. ampulla of Vater, distal common bile duct and duodenum) adenocarcinomas. The expression of the following eight biomarkers was assessed by immunohistochemistry and compared with normal pancreas (n = 14): carcinoembryonic antigen (CEA), epithelial cell adhesion molecule (EpCAM), hepatocyte growth factor receptor (HGF, cMet), vascular endothelial growth factor receptor (VEGFR), epithelial growth factor receptor (EGFR), human epidermal growth factor receptor 2 (HER2), urokinase plasminogen activator receptor (upPAR), and integrin alphavbeta 6 (avb6).

**Results:** We found that avb6 was abundantly present in 91.3%, HGF in 90.7%, HER2 in 88.9%, CEA in 81.2%, upPAR in 70.3%, EGFR in 66.7%, EpCAM in 33.3% and VEGFR in 31.3% of pancreatic ductal adenocarcinoma cases. Among the periampullary adenocarcinoma samples HGF was overexpressed in 90.7%, HER2 in 91.1%, avb6 in 88.1%, CEA in 76.6%, EGFR in 70.7%, EpCAM in 52.5%, VEGFR in 43.9% and upPAR in 36.7% of cases. CEA, upPAR and avb6 expression was absent in the surrounding healthy pancreatic tissue, which may translate in an optimal target-to-background ratio when using these targets for imaging purposes.

**Conclusions:** These results suggest that based on expression rate and potential tumor-to-background ratio CEA, avb6 and upPAR are the most promising biomarkers for tumor-specific contrast agent development for image-guided pancreatic and periampullary cancer surgery.

No conflict of interest.

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30. The predictive ability of timed ‘Up & Go’ in hepato-pancreato-biliary onco-geriatric surgical patients

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**Background:** With the expanding geriatric population, cancer prevalence in the elderly has increased accordingly. Within the oncogeriatric surgical population, it is very important to differentiate between fit and non-fit patients in order to effectively implement preventive measures and to improve outcome in this population. Therefore, it is necessary to find a time-saving and efficient screening tool to assess the probability of developing postoperative complications in elderly cancer patients, and to anticipate the postoperative outcome. The aim of this study was to determine the prognostic ability of timed ‘Up & Go’ (TUG) versus the American Society of Anesthesiologists (ASA Score) in hepato-pancreato-biliary (HPB) oncogeriatric surgical patients.

**Materials and methods:** This was a single centre prospective cohort study including patients ≥70 years undergoing surgery for HPB malignancies. Primary endpoints were 30-day morbidity and 30-day mortality, secondary endpoints were hospital stay and re-admission rate. TUG, and ASA were administered preoperatively. The TUG depicts the time a person needs to stand up from a chair, walk 3 meters, turn around, walk back and sit down again: a score of less or equal to 15 seconds was considered a low score. The ASA physical status classification system is a system for assessing the fitness of cases before surgery adopted by the American Society of Anesthesiologists (score from 1 to 6).

**Results:** 31 patients were enrolled into the study and data were analysed. All patients underwent major surgery: 14 patients (45%) had complications within 30 days from surgery and, among them, 4(12.4%) developed major complications (grade 3-4 Clavien-Dindo); one (3.2%) patient died within the same period of time. In univariate analysis neither TUG nor ASA proved to be of prognostic value with regard to 30-day morbidity (no versus any complications). Of these 78, 68 were identified in 1 patient, 7 in 2 patients, 2 in 3 patients (MTCH2 and PABPC1) and 1 in all 4 patients (CDC27). Of the paired mutations identified in more than one patient, only one was found to correlate with response to treatment (LGALS3).

**Conclusions:** This is the first reported exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases to identify novel response biomarkers and drug targets

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**Background:** Next generation sequencing technology has evolved rapidly over the past few years, with targeted exome capture now widely available. The 1000 Genomes Project and The Cancer Genome Atlas have gone a long way to mapping the genotype of colorectal cancer and furthering our understanding of metastogenesis. In the clinical setting however, biological material from the liver metastasis is not accessible until after resection, and we are therefore dependent upon deriving information on genetic mutations from the primary tumour. We aimed to establish the frequency of single nucleotide variants (SNVs) common to primary and metastatic tumours as well as discrete to either, and also those which may predict response to neoadjuvant chemotherapy.

**Methods:** We performed exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases, as well as corresponding normal colonic mucosa and liver parenchyma, from 4 patients who had received neoadjuvant chemotherapy. Paired-end exome sequencing at a depth of 50X and read length of 120bp was performed using the Ion Proton platform. Raw data was mapped to a reference genome prior to variant calling and annotation.

**Results:** A total of 222,225 SNVs were identified, of which 21,179 were non-synonymous, 6495 of which were missense and 427 of these were predicted to be biologically deleterious.

<table>
<thead>
<tr>
<th>Patient Responder</th>
<th>Total SNVs</th>
<th>Primary SNVs Only (%)</th>
<th>Met Only (%)</th>
<th>Common to Primary and Met (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Yes</td>
<td>133</td>
<td>35 (26)</td>
<td>58 (44)</td>
<td>40 (30)</td>
</tr>
<tr>
<td>2 Yes</td>
<td>155</td>
<td>64 (41)</td>
<td>74 (48)</td>
<td>17 (11)</td>
</tr>
<tr>
<td>3 No</td>
<td>122</td>
<td>48 (39)</td>
<td>60 (49)</td>
<td>14 (12)</td>
</tr>
<tr>
<td>4 No</td>
<td>120</td>
<td>62 (52)</td>
<td>37 (31)</td>
<td>21 (17)</td>
</tr>
<tr>
<td>Mean</td>
<td>132.5</td>
<td>52.3 (39.5)</td>
<td>57.3 (43.2)</td>
<td>23 (17.4)</td>
</tr>
</tbody>
</table>

A mean of 39.5% of SNVs identified were unique to the primary tumour, and 43.2% unique to the liver metastasis. 17.4% of SNVs are common to both tumour types, of which we identified 78 (including 38 novel variants). Of these 78, 68 were identified in 1 patient, 7 in 2 patients, 2 in 3 patients (MTCH2 and PABPC1) and 1 in all 4 patients (CDC27). Of the paired mutations identified in more than one patient, only one was found to correlate with response to treatment (LGALS3).

**Conclusions:** This is the first reported exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases. We have identified a series of novel genetic variants, a number of which are present in both primary and metastatic tumours. Given the inability to obtain biological information from a colorectal liver metastasis until after resection, identification of these SNVs in the primary tumour may allow stratification and patient selection for neoadjuvant chemotherapy for the treatment of colorectal liver metastases.
32. Factors associated with outcome in patients undergoing surgery for borderline resectable pancreatic cancer

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Background: Venous resection (VR) is the standard of care in patients with borderline resectable pancreatic cancer. We performed a multivariable analysis to determine the factors associated with outcome in patients undergoing surgery for borderline resectable pancreatic cancer.

Methods: This is a UK multicenter retrospective cohort study assessing outcomes and risk factors in patients undergoing pancreaticoduodenectomy with venous resection (PDVR) and standard pancreaticoduodenectomy (PD). Nine high-volume UK centers contributed. All consecutive patients with T3 only adenocarcinoma of the head of the pancreas undergoing surgery between December 1998 and June 2011 were included. Multivariable logistic and proportional hazards regression analyses were performed to determine the association between the surgical groups and morbidity, in-hospital mortality and overall survival.

Results: 1070 patients were included of whom 840 (78.5%) had PD and 230 (21.5%) had PDVR. Median age at surgery was 66 (range 27–84). For morbidity, the only difference between PD and PDVR was greater delayed gastric emptying with PDVR (39/840 (4.6%) vs 25/230 (10.9%), p = 0.0007), and the number of blood units transfused (0.03) vs 0.09, p = 0.03). There were no differences for in-hospital mortality (26/840 (4.6%) vs 10/230 (4.4%), p = 1.00) or median overall survival (18.48 vs 18.84 months, p = 0.66). Multivariable analyses identified R1 resection margin status (adjusted hazard ratio [aHR] 1.22, p = 0.01), N1 nodal status (aHR 1.92, p = 0.0001), perineural invasion (aHR 1.37, p = 0.002), tumour size ≥20mm (aHR 0.63, p = 0.0001) and a re-laparotomy (aHR 1.84, p = 0.0001) to be independently associated with overall mortality. Factors associated with in-hospital mortality were a high creatinine (aHR 1.14, p = 0.02), post-operative bleeding (aHR 2.86, p = 0.04) and a re-laparotomy (aHR 8.42, p = 0.0001). Sensitivity analyses using a univariate model demonstrated this to be similar in the PDVR group when the PD group was excluded.

Discussion: This largest study on T3 tumours suggests that the factors associated with poorer survival outcome in patients undergoing surgery for T3 tumours arise from histological assessment. Patients with these features are at a high risk of disease recurrence. Predictive pre-operative features are required to determine a subset of patients who might benefit from neo-adjuvant therapy.


No conflict of interest.

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33. Irreversible electroporation in the treatment of advanced pancreatic cancer

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Introduction: The prognosis of pancreatic adenocarcinoma is extremely poor. The incidence is rising worldwide. Only about 20% of patients have localized nonadverse disease and can be operated on. There is not any effective oncological treatment. Irreversible electroporation (IRE, Nano knife) have been used in cases of advanced disease since 2009. This method is safe but the long term outcomes are unknown.

Methods: We have used IRE in the treatment of 48 patients with advanced inoperable disease. Half of them had had chemotherapy before IRE. The application of IRE was performed during laparotomy or under CT guidance. All patients have been treated by chemotherapy after the procedure too.

Results: The hospital stay was 11 days in cases of laparotomy application and 6 days after CT guided IRE. The complication occurred in 7 patients. Two of them were reoperated due to complication. Unfortunately there were two dead’s after IRE. We have repeatedly observed vanishing of PET CT activity after IRE but this effect was only temporally. We did not recognize longer survival after procedure but the quality of life is better.

Conclusions: IRE is safe and simple method for pancreatic tumor destruction. We have not observed downsizing of the tumor what is described in the literature. The proper role of IRE in the treatment of pancreatic tumors needs further studies. We continue in our study and expect inclusion other patients.

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No conflict of interest.

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29 October 2014 11:30 — 13:00
Proffered Paper Session: Oesophago-Gastric Cancer

35. The impact of proportion of early gastric cancer on survival following radical surgery for T2-4 gastric cancer: How reliable is it?

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Background: Geographic variability in prognosis for gastric cancer (GC) is well documented, as in Eastern series (primarily from Japan and Korea) higher survival rates were reported when compared with Western patients at the same stage of disease. The explanation for this phenomenon is unknown. Even if molecular studies on Eastern and Western patients have been conducted, potential biological differences between patient cohorts are still unclear.