used to measure pro- and anti-inflammatory cytokines. Viral replication was investigated using a plaque assay technique and by directly infecting CRLM tissue with a related GFP-encoding VV. To demonstrate induction of the innate immune response we infected PBMCs with the virus and measured levels of degranulation of Natural Killer (NK) cells, and the cytotoxic ability when activated PBMCs were exposed to CRC targets.

Results JX-594 treatment results in up to 75% lysis of CRC cell lines in 96 h. VV can replicate in CRC cells (250-fold replication in 72 h), thus potentially spreading through a tumour cell population, magnifying its anti-tumour effect. VV is able to produce large quantities of GMSCF. This is a cytokine that can stimulate a variety of immune effector cells including dendritic cells, which can be recruited to the tumour environment. In our study, more than 50% of the NK cells become "armed" in response the viral treatment, with the release of granyzmes that can induce apoptosis of target tumour cells. These activated NK cells when exposed to CRC targets, result in a 40%–50% lysis of the tumour cells in 24 h. VV treatment can also cause the up-regulation pro-inflammatory cytokines around the tumour environment, and potentially suppress new vessel formation by inhibiting VEGF.

Conclusion Viral therapeutics holds promise as a novel treatment modality for treatment of disseminated malignancy, providing direct tumour-specific lysis and the induction of tumour-specific innate immunity. It has been shown to be safe for intravenous delivery and early studies show promising results. We propose that VV may provide an adjunct to liver resection for treatment of liver cancer, and we will soon embark on a multi-centre early phase trial, whereby VV will be administered intravenously pre-operatively.

Competing interests None declared.

OC-057 10 YEARS ON FROM THE IMPROVING OUTCOMES GUIDANCE—DEVELOPMENT OF A TERTIARY PANCREATIC CANCER UNIT

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Introduction In 2001 the National Institute for Clinical Excellence (NICE) published guidance on best practice for cancer services entitled Improving Outcomes Guidance (IOG). These guidelines specified centralisation, increased patient volume (>200 referrals/year), improved resection rates (>10%–15%) and reduced post-operative mortality rates (<5%). We looked at the development of a regional tertiary pancreatic centre over the 10 years following this, and how practice has changed over this time.

Methods A prospectively maintained database of all referrals with suspected pancreatic cancer to the Supra-Regional Pancreas Centre in Liverpool was interrogated to assess changes in practice and outcome from 2001 to 2010 inclusive. Data were analysed with χ^2 for trend for categorical data and log rank for survival data.

Results 2076 patients with malignancy were referred, rising from 73 in 2001 to 364 in 2010. 511 resections for malignancy were performed (25%), ranging between 21% (42/182) in 2005 and 36% (33/87) in 2003 per year, with no trend over time. 710 patients underwent planned operation for malignancy over the 10-year period ranging from 41 procedures in 2001 and peaking at 97 in 2008, with 94 procedures in 2009 and 88 cases in 2010. The percentage of planned resections that had a successful resection increased from 51% (21/41) in 2001 to 90% (79/88) by 2010 ($p<0.001$). The mortality from resection was 9/567 (2%) and overall was 5% (37/710) including palliative procedures. The 1 year survival rates of patients who underwent a successful resection improved from 65% (13/20) in 2001 to 76% (69/91) by 2009 ($p=0.02$). There has been a rise in the number of intraductal papillary mucinous neoplasm (IPMN) resected with none in 2001 increasing to 12 resections during 2009, 10 in 2010 and 212 patients currently undergoing surveillance for IPMN. The number of staging laparoscopies has remained fairly constant at around 27 per year, despite the increase in referrals, which reflects more stringent criteria in selecting these patients for laparoscopy.

Conclusion Over the last 10 years we have seen centralisation of services, which was completed in 2007. This has led to an increase in volume of cancer referrals in line with IOG guidance. Although resection rates have stayed constant, this reflects the increasing number of patients referred with irresectable disease for other treatments, including chemotherapy and novel cancer trials. There has been an improvement in case selection as demonstrated by a reduction in the percentage of bypass procedures, reflecting better pre-operative staging of patients. This has also lead to an improved 1-year survival in those patients who had a successful resection.

Competing interests None declared.

OC-058 INCREASED MORBIDITY IN OVERWEIGHT AND OBESE LIVER TRANSPLANT RECIPIENTS—A SINGLE CENTRE EXPERIENCE WITH 1325 PATIENTS

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Introduction Obesity levels in the UK have risen over the years. Studies from the US and elsewhere have reported variable outcomes in terms of post liver transplant morbidity, mortality and graft survival in obese liver transplant recipients. There are no such reports from the UK. The aim of this study was to analyse the impact of BMI (Body Mass Index) on outcomes following adult liver transplantation.

Methods Data were retrieved from a prospectively maintained institutional database from 1994 to 2009. Patients were stratified into four BMI categories established by the WHO: underweight ($<18.5\ kg/m^2$), normal weight ($18.5-<25.0\ kg/m^2$), over weight ($>25.0-<30.0\ kg/m^2$) and obese ($>30.0\ kg/m^2$). Primary outcome was to evaluate post-operative morbidity and secondary measures were overall patient and graft survival. Categorical variables were analysed by χ^2, and continuous variables by one-way ANOVA ($p<0.05$ was considered significant). Kaplan–Meier curves were used to study the effect of BMI categories on patient and graft survival.

Results 1400 adult transplants were identified. 1325 patients had height and weight measurements and were included in the study. The overall morbidity was higher in overweight (71.9%, $p<0.001$) and obese patients (69.2%, $p<0.001$) in comparison to normal weight recipients (64.3%). Post-operative septic events were common in overweight (60.6%, $p=0.001$) and obese patients (61.0%, $p=0.007$) in comparison to normal weight patients (50.4%). Post-operative chest infections were much more common in obese (14.2% vs 9.0%, $p=0.038$) and overweight recipients (17.7% vs 9.0%, $p<0.001$) in comparison to normal weight recipients. Obese patients had significantly longer intensive care stay than normal weight patients (mean 4.1 vs 3.2 days, $p=0.043$). The length of post-operative hospital stay was significantly longer in obese (mean 21.5 days, $p=0.009$) and overweight patients (mean 22.4 days, $p=0.000$) in comparison to normal weight patients (mean 18.0 days). Similarly, ascitic or drain fluid sepsis was common in overweight patients in comparison to normal weight recipients (16.5 % vs 2.2%, $p<0.001$). There was no difference in overall graft survival ($p=0.222$) and patient survival ($p=0.196$) between the four groups by log-rank test.

Conclusion This is the largest and the only reported UK series on BMI and outcome following liver transplantation. Overweight and