6062 POSTER

Pseudocontinent Perineal Colostomy − an Interesting Technique for Low Rectal Cancer Surgery: Retrospective Study of 149 Cases

A.M. Souadka[1]. [1]*National Institute of Oncology, Oncologic Surgery Department, Rabat, Morocco*

Background: This retrospective study was designed to evaluate functional results of pseudocontinent perineal colostomy (PCPC) using Schmidt's technique in North African patients with low rectal cancer.
Methods: During 15 years, 380 abdominoperineal resections for low rectal cancer were performed. One hundred forty-nine cases among them had PCPC. There were 76 women, with an average age of 47 years. All patients had 46 Gy neoadjuvant chemoradiotherapy. Functional results were evaluated prospectively at regular intervals.
Results: There was no postoperative mortality. Operative morbidity rate was only 18.3%, essentially dominated by perineal suppuration (40%). According to Kirwan score on a functional level, 95 patients had gas incontinence and 46 patients an occasional minimal soiling. At one year surveillance, the graft was clinically well detected in 55% of cases and anorectal manometric study in 5 cases showed a hypotonic pseudosphincter. Colic irrigation rhythm was, in 74% of cases, every 24 to 48 h, and 15.6% of patients didn't need irrigations anymore 6 months after surgery.
With a median follow up of 5 years, 77% of the patients were satisfied and 23% half-way satisfied with this technique.
Conclusion: PCPC is a simple technique with a low morbidity that seems to be safe and feasible. It revolutionises low rectal cancer management by avoiding iliac stomas. It improves patients' quality of life by preserving their body image.

6063 POSTER

Relationships Between Colorectal Cancer and Insulin, Insulin-like Growth Factor-1 and Insulin-like Growth Factor Binding Protein-3

A.B. Moiseenko[1], L.M. Berstein[2], A.V. Belyaeva[3]. [1]*Petrov Oncology Research Institute, Colorectal and Combined Surgical Treatment, St Peterburg, Russian Federation;* [2]*Petrov Oncology Research Institute, Oncological Endocrinology, St Peterburg, Russian Federation;* [3]*Petrov Oncology Research Institute, Gastrointestinal Tumours, St Peterburg, Russian Federation*

Background: Nowadays colorectal cancer takes one of the leading place among oncological morbidity in the whole world. Last years was marked by interest in the area of insulin-like growth factor and its connection with increasing of risk of appearance and ongoing of colorectal cancer. Insulin and insulin-like growth factor (IGF) take places in cell proliferation and suppression of apoptosis. It is also interesting to study insulin resistance in colorectal cancer patients.
Materials and Methods: 61 patients with colorectal cancer and 42 healthy people were enrolled in the study. In blood serum level of insulin, IGF-1 and IGF binding protein-3 (BP-3), c-peptide and glucose was detected.
Results: Decreasing of IGF-1 and IGFBP-3 level with the lapse of years was found in a group of healthy people. In group of patients with colorectal cancer there was no such tendency. With increasing stage of the disease level of IGF-1 also increased (52.4 ng/ml in patients with I stage comparing with 81.0 ng/ml in III stage). The same trend was noted for IGFBP-3 level − in I stage it was 2045 ng/ml and increased to 3260 ng/ml in III stage. During analisis this data with the depths of tumour invasion the highest concentration of these signs was found in T3 carcinomas so the level of IGF-1 was 59.3 in average and level of IGFBP-3 was 2922. In patients with metastatic lymphatic spread it was found the reliable increasing of IGF-1 level (81.0 ng/ml comparing with 46.9 ng/ml in patients without metastatic lymphatic lesion). In spite of this in patients with distant metastases level of IGF-1 was lower than in group with regional metastases: 38.3 ng/ml comparing with 81.0 ng/ml.
In group of colorectal cancer patients the average insulin level on an empty stomach was 9.5 pmol/l but in healthy group it was 6.2 pmol/l in people younger than 50 y.o. and 7.2 in those who were older than 50. C-peptide level was on the contrary lower twice in patients with colorectal cancer and was 262.5 nmol/l and in healthy people it was 472.3 nmol/l. The level of insulin decreased as the depths of tumour invasion increased.
Conclusions: In patient with colorectal cancer it was found loss of depending IGF-1 system on the age of patients that could be a confirmation that this regulatory mechanism was lost for them.
IGF-1 could be a marker of tumour progression till the moment of regional spread inclusive.
The highest average level of IGF-1 and IGFBP-3 was found in T3-extent local invasion and in III stage of disease. Hyperinsulinemia is found in the early stage of colorectal cancer. It's necessary to differentiate correction of hormone-metabolic disbalance in different tumour stages.

6064 POSTER

Neoadjuvant Trans-arterial Chemo-embolization Using Irinotecan Beads for Easily Resectable Colorectal Liver Metastases − a Phase II Study

R. Jones[1], D. Dunne[1], M. Terlizzo[1], E. O'Grady[1], S. Fenwick[1], H. Malik[1], G. Poston[1]. [1]*University Hospital Aintree NHS Foundation Trust, Department of Hepatobiliary Surgery, Liverpool, United Kingdom*

Background: Peri-operative chemotherapy confers a 3-year progression free survival advantage for patients with colorectal liver metastases. Recent reports have also correlated degree of post-chemotherapy tumour necrosis to improved post-hepatectomy disease free survival. Studies to date have only examined multiple cycles of systemic neoadjuvant chemotherapy, which are associated with pathological damage to normal hepatic parenchyma, which in turn is associated with increased perioperative morbidity and mortality. Irinotecan eluting beads (DEBIRI-TACE) are delivered to tumour intra-arterially, where they provide controlled & sustained delivery of drug directly to tumour, maximising local response and reducing systemic exposure. Work on DEBIRI-TACE in the palliative setting has demonstrated promising early results. This study aimed to examine the feasibility and safety of a single neoadjuvant bead embolisation 1 month before hepatectomy.
Materials and Methods: Patients with easily resectable unilobar colorectal liver metastases treated at 4 centres around Europe were recruited (n = 40 succesful embolisations). DEBIRI-TACE was administered 1 month before surgery. Primary end-point was tumour resectability, Secondary end points included pathological tumour response and complication free TACE and hepatectomy.
Results: TACE attempted in 42 patients and was successful in 33. Reasons for failed TACE included arterial abnormality (n = 2), progressive disease (n = 2), bilobar disease (n = 2), hepatoma (n = 1), allergy to contrast (n = 1) and concomitant infection (n = 1). There was 1 post-TACE liver abscess (3%), and 1 post TACE pancreatitis(3%) (recognized complications). 26 patients have undergone hepatic resection so far, with R0 resection rate of 100% and no significant post-hepatectomy morbidity. Thirty day post-operative mortality was 7.6% (n = 2), with neither death related to TACE (1 intraoperative pneumomediastinum, 1 MODS after aspiration pneumonia). Complete pathological response (no viable tumour) was demonstrated in 15% of lesions, major pathological response in 55% of lesions and minor response in 30% of lesions. These pathological response rates are comparable with other reported series following multiple cycles of systemic chemotherapy.
Conclusions: Neoadjuvant DEBIRI TACE for resectable colorectal liver metastasis is safe and is not associated with increased post-hepatectomy morbidity. A single treatment with DEBIRI-TACE resulted in pathological response of tumour similar to that seen after systemic treatment, which may translate to improved progression free survival.

6065 POSTER

Significance of Mutation in K-Ras Gene in Pathogenesis and Clinical Course of Colorectal Cancer

A.V. Belyaeva[1], G.A. Yanus[2], E.N. Imyanitov[2], E.N. Suspitsin[2], A.V. Goulyaev[1], A.G. Ievleva[2], A.B. Moiseenko[1]. [1]*N. N. Petrov Research Institute of Oncology, Gastrointestinal Tumours, Saint Petersburg, Russian Federation;* [2]*N. N. Petrov Research Institute of Oncology, Molecular Oncology, Saint Petersburg, Russian Federation*

Background: Morbidity and mortality from colorectal cancer take one of the leading places almost in all countries in Europe and America. One of the most important somatic mutations during colorectal cancerogenesis occurs in KRAS gene. KRAS -mutation is an early that happens before unregulated cell proliferation and malignant transformation started. Frequency of this genetic event varies in different countries. The most common place of KRAS mutation is 12 and 13 codon. According international data correlation between KRAS status and cancer spread is still under discussion.
Purpose of the study was to evaluate of frequency of KRAS mutation among Russian patients and its influence on growth and clinical course of disease.
Materials and Methods: Material of the study was 137 samples of tumour from 135 patients with colorectal cancer who were treated in N.N. Petrov Research Institute of Oncology since 2005 till 2006. 99 patients had rectal cancer and 36 patients had colon cancer. KRAS-mutations were found by an allele-specific polymerase chain reaction on DNA from tumour sections, typically obtained from a formalin-fixed, paraffin-embedded block. Statistical analyses were performed using SPSS and Statistica. Inferential statistics used for tabular data included Fisher's exact tests, Pearson 2, odds ratios with 95% confidence intervals. All P-values were two-sided. Statistical significance was ascribed to P-values $\leqslant 0.05$.
Results: KRAS-mutations were found in 48 from 135 patients and was equal to 35.6%. 44 mutations were found in 12 and 13 codons, three

mutations − in 61 codon and one mutation was found in 146 codon of KRAS gene. Frequency of mutation in women was higher than in men (67.4% and 43.2%, respectively). Mostly often KRAS-mutation was found in patients younger than 39 y.o. (66.7%). In patients older than forty it was found that frequency of mutation increased depending on age. Mutations were found in a group of patients where frequency of oncological malignancies was 29.2% but frequency of this sign in group with wild type of gene was 43.7%. Combination of adenocarcinoma with polyps was found in 16.7% in group with mutant gene and only in 6.9% in group with wild type. Frequency of KRAS-mutation in colon cancer was 22.2% and 40.4% in rectal cancer. Metastatic lymphatic spread was found in 46.2% of patients with mutation and only in 29.2% of patients with wild type KRAS-gene.
Conclusion: KRAS-mutation occurs two times often in rectal cancer than in colon that can be the evidence of different pathways of their growth. In patients with mutation combination of adenocarcinoma and polyps occurs often than in patients with wild type of gene. Tumours with mutant status give metastatic spread in lymphatic nodes almost two times often than tumours with wild type.

6066 POSTER

Does the "Two Week Wait" Target Improve the Waiting Times for Specialist Review and Also Waiting Time Between First Seen by Colorectal Cancer Specialist and Diagnosis of Colorectal Cancer?

M. Kumari[1], I. Nikolopoulos[1], S. Huf[1], D. Corry[1], K. Thakur[1]. [1]*Queen Elizabeth Hospital, General Surgery, London, United Kingdom*

Background: Incidence rates of colorectal cancer have risen very slowly for two decades, while mortality rates have fallen by over 25 per cent. 5-year survival rates have risen steadily to nearly 50 per cent. Cancer waiting time targets were introduced to monitor service performance via process improvement. The intention was to improve the outcome (survival) of the disease. The aim of the study was to assess whether the "two week-wait" target can improve survival in patients with colorectal cancer.
Materials and Methods: 613 patients were diagnosed with colorectal cancer between January 2002 and December 2006. Data were retrospectively collected from the cancer database at Queen Elizabeth Hospital, London. Survival was compared in patients that were referred via the two week-wait rule (Group 1) and those not referred via this pathway (Group 2).
Results: Only 27% of patients were referred under the two week-wait rule and of the remainder a significant proportion came from Accident & Emergency and GPs (131 and 144 patients respectively). Waiting time between referral and first seen by colorectal specialist for both groups is seen in Table 1 and waiting time between first seen by specialist and diagnosis of colorectal cancer for both groups is seen in Table 2.

Table 1

	Group One	Group Two
Waiting time between referral and first seen by specialist		
Average	9 days	19 days
Median	8 days	5 days
Range	0−61 days	0–233 days
Number of patients waiting after 14 days	5 (3%)	145 (33%)

Table 2

	Group One	Group Two
Waiting time between specialist review and diagnosis of colorectal cancer		
Average	22 days	22 days
Median	19 days	17 days
Range	−100 to 161 days	−20 to 429 days

Conclusions: Group One patients were seen significantly quicker by a colorectal specialist once the referral was made however in both groups there was no difference in the waiting time for diagnosis of cancer after they were seen by a specialist.

6067 POSTER

Results of the Concurrent or Staged Liver Resection for Primary Colorectal Cancer With Synchronous Hepatic Metastases

I. Shchepotin[1], O. Kolesnik[1], O. Vasiljev[1], A. Lukashenko[1]. [1]*National Cancer Institute, Abdominal Oncology, Kyiv, Ukraine*

Background: Resection of hepatic metastases is the preferred treatment for selected patients after resection of primary colorectal carcinoma, but timing is controversial. This study was designed to compare outcomes of patients receiving concurrent resection of hepatic metastases and the primary colorectal tumour with those patients receiving staged resection (within 3−6 months).
Material and Methods: We retrospectively analyzed medical records (2008–2010) of 38 consecutive patients with synchronously recognized primary carcinoma and hepatic metastases who underwent concurrent (14 patients, Group 1) or staged (24 patients, Group 2) colonic (18), rectal (20) and hepatic resections performed at our institution.
Results: Concurrent and staged groups were similar in demographics, tumour grade, stage, preoperative comorbidity (cardiac and respiratory), characteristics of hepatic metastases and single vs. multiple lesions. No significant differences were observed between groups (concurrent vs. staged) in type of colon resection ($P = 0.5$) or hepatic resection ($P = 0.1$), overall operative duration (mean, 400 vs. 360 minutes), blood loss (mean, 890 vs. 880 ml), disease-free survival from date of hepatectomy (median, 11 vs. 11 months). Overall duration of hospitalization was significantly shorter for concurrent than for staged resection (mean, 24 vs. 11 days; $P < 0.001$). It is noticed, that in Group 1 of patients there is a bigger risk of development of postoperative complications (53 vs. 34%), 34% from them were specific to a resection of a liver. Disease progressing in this group was observed in 3 cases (8.3%) in terms 3, by 5 and 11 months after operation. In Group 2 of patient resection of a liver were accompanied concerning small frequency of postoperative complications and absence of mortality. Operative mortality rate in Group 1 was 8%.
Conclusions: Staged resection colon and liver is safe and more efficient than concurrent resection for colorectal cancer.

6068 POSTER

Detection of Recurrences During Follow-up After Liver Surgery for Colorectal Metastases − Both Carcino-Embryonic Antigen (CEA) and Imaging Are Important

C. Verberne[1], T. Wiggers[1], K.M. Vermeulen[2], K.P. de Jong[3]. [1]*Groningen University Hospital, Surgery, Groningen, The Netherlands;* [2]*Groningen University Hospital, Epidemiology, Groningen, The Netherlands;* [3]*Groningen University Hospital, HepatoPancreaticoBiliary Surgery, Groningen, The Netherlands*

Background: The follow-up of patients treated for colorectal liver metastases (CRLM) is not standardized. The accuracy of Carcino-Embryonic Antigen (CEA) rise for finding recurrences after treatment for CRLM is compared here with the accuracy of routine imaging of liver and chest.
Materials and Methods: All patients in follow-up after intentionally curative treatment for CRLM from 1990–2010 were analyzed. The way in which recurrences became apparent (i.e., CEA rise, routine imaging, or both) was registered. Significant CEA rise was defined as a 25% rise compared with the previous value. The specificity and sensitivity of rises in CEA prior to finding of recurrent disease were calculated using ROC curves. An economic evaluation of the costs per resectable tumour recurrence was performed.
Results: Recurrences were detected in 46% of the procedures through CEA rise concomitant with positive imaging, in 23% through CEA rise without positive findings on routine imaging, and in 31% through positive imaging without rise in CEA (table 1).

Table 1. Trigger leading to the diagnosis of recurrent disease.

Trigger	Recurrent disease, n = 254		
	Incurable	Curable	Total (%)
Positive routine imaging without concomitant CEA rise	52 (30.2)	28 (34.2)	80 (31)
CEA rise and positive routine imaging	78 (45.4)	38 (46.3)	116 (46)
CEA rise without positive routine imaging	42 (24.4)	16 (19.5)	58 (23)
Total	172 (100)	82 (100)	254 (100)

The numbers between brackets represent the column percentages.

For patients with elevated CEA levels before liver surgery, 78% of recurrences were found through CEA rise. In patients with normal CEA levels before liver surgery, 29% of recurrences were found through CEA rise. The resectability rates of recurrences did not differ between the different triggers (CEA rise or positive imaging).
ROC curves for a 25% rise in serum CEA for all recurrences, patients with normal CEA levels, and patients with increased CEA levels before liver surgery had an area under the curve (AUC) of 0.77, 0.66, and 0.78, respectively. Costs per (curable) recurrence are low.
Conclusions: In the follow-up of patients after liver surgery for CRLM a 25% rise in CEA serum level can detect recurrences accurately, but routine imaging is indispensable, especially in patients with normal CEA