with colorectal cancer (CRC) in Tayside, Scotland between March 2000 and September 2007. Data came from the CRC database at Ninewells Hospital. Patients with FOBT screen detected cancers (SCR) were identified from the Scottish Bowel Screening Pilot Study and were then linked to the cancer database. Patients not identified as screen detected were deemed to be symptomatic (SYM). The age range of SYM patients was limited to that of subjects who had been invited for bowel screening (50-69 years). RESULTS: There were 437 (60.2% males) SYM and 187 (64.7% males) SCR patients. As expected, there was a significant difference in stage distribution with 83 (19.0%) of the SYM group compared with 77 (41.6%) of the SCR group diagnosed at Dukes A (P<0.0001). By the end of the study period 115 (26.3%) of the SYM group had died from CRC compared to 25 (13.4%) of the SCR group (P<0.0001). Within all three Dukes stages there were significant differences in the T stage distribution in the two groups with consistently more favourable distributions for the SCR group (all P< 0.04). In Dukes A 40.9% were staged as T1 and 59% as T2 in the SYM group compared to 58.4% and 41.6% in SCR group. Within Dukes B 90.6% were stage T3 and 9.4% as T4 in the SCR group compared to 77.3% and 22.7% in the SYM group. Within Dukes C a similarly favourable shift in the T stage was seen in the SCR group. When anatomical site was examined there was a significant difference (P=0.02) in the anatomical distribution of cancers in the two groups with a preponderance of left colon tumours in the SCR group at the expense of right colonic and rectal tumours. When the stage distribution in the different anatomical sites was scrutinised the proportion of Stage A cancers in the right colon, left colon and rectum was 6.6%, 20.6% and 26.6% respectively compared with 24.3%, 43.8% and 50% respectively for the SCR group. CONCLUSION: In this cohort of patients defined by age and location, it was found that Dukes staging may be misleading is assessing screen-detected cancers as they had a more favourable T stage distribution within each Dukes stage. In addition, screening appeared to slightly underdiagnose right sided and rectal cancers, and although stage at presentation improved from the right colon to the rectum in the symptomatic cancers this was mirrored by significantly better stage distributions in all anatomical sites in the screen-detected group.

W1988

Inter-Observer Variability in Re-Evaluation of a Diagnosis of "Hyperplastic Polyp"

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Purpose: Colon cancer is believed to occur via the APC pathway (adenoma-carcinoma sequence) in about 80 % of cases. In the other 20%, 'serrated polyp pathway' has been described. This category includes various histological sub-types. Emerging evidence suggest that certain subtypes may have neoplastic potential. Our purpose was to re-evaluate the histological diagnosis in patients previously diagnosed with 'hyperplastic polyp' and to determine the inter-observer variability in the classification of these lesions. Methods: We randomly retrieved histology slides from 40 pts with the diagnosis of 'Hyperplastic polyp' at the John Dempsey hospital (year 2002-03).The slides were re-reviewed by the two pathologists (Table 1 & 2) and lesions were re-classified based on following recently proposed classification for serrated lesions. 1)Hyperplastic polyp a)Microvesicular serrated polyp (MVSP) b)Goblet cell serrated polyp (GCSP) c)Mucin poor serrated polyp (MPSP) 2) Sessile serrated adenoma (SSA) 3) Traditional serrated adenoma/serrated adenoma (TSA) 4) Conventional adenoma (tubular, villous, tubulovillous) Results: The results are shown in the table provided. Conclusion: Currently, follow-up colonoscopy is recommended every 10 years for patients with hyperplastic polyps, similar to subjects with normal screening colonoscopy. Considering the propensity of some serrated polyps to progress to colon cancer, it is important to pay attention to these particular sub-types while diagnosing colon polyps. A shorter interval follow up may be advisable in these cases.Our study indicates that there seems to be considerable disagreement between pathologists regarding the precise classification of these lesions and further attempts at consensus are necessary.Larger prospective clinical trials are needed to ascertain the prognosis and outcome of described histology.
1st Pathologist:Re-evaluated diagnosis

Total	MVSP	GCSP	SSA	TSA	Goblet cell hyperplasia	Goblet cell hyperplasia + MVSP
40	14	0	23	1	1	1

Table 1
2nd Pathologist:Re-evaluated diagnosis

Total	MVSP	GCSP	SSA	TSA	MVSP+GCSP	MVSP+GCSP+SSA	GCSP+SSP
40	9	7	17	1	4	1	1

Table 2

W1989

Occurrence of Metachronous Colonic Cancer After Curative Colectomy. How Much and How Important?

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Introduction: The aim of this retrospective study performed between 1999-2005 consisted in evaluation of the incidence of metachronous colonic cancer in 895 patients with colonic cancer in which curative colectomy was performed. The average follow/up was 52.05+/-8.12 months. Methods: The average time elapsed after colectomy was 4.41+/-2.17 years. Diagnostic criteria for metachronous cancer were: occurrence more than 12 months after curative surgery, with pre-operative complete colonoscopy or one negative post-operative colonoscopic follow-up to rule out synchronous tumor; absence of restant unresected synchronous polyps after initial colectomy; tumor arising from mucosa at a different site than anastomosis. Colonoscopy was performed annually in the first three years, then every 2 years. Hereditary colonic cancers (FAP and HNPCC) were excluded. Results: Anastomotic recurrence of index cancer was observed in 142 cases (15.86+/-4.34%), adenomatous metachronous polyps in 163 (18.21+/-5.01%) while metachronous cancer only in 14 cases (1.56+/-0.64%), corresponding to an average annual incidence of 0.26+/-0.01%. The greatest part (57.14%) of those cancers was discovered in average after 38.43+/-9.04 months after initial colectomy. The highest risk for metachronous cancer was identified in patients in whom the index tumor resided on the right colon (6.7+/-3.32%). Metachronous cancers after resections of the left colon were observed with the lowest frequency (3.35+/-1.07%), while those appearing after segmentary transverse resections were discovered with intermediate frequency (5.58+/-2.87%). Discussion / Conclusion: Metachronous colonic cancer is a relatively rare eventuality after curative colectomy as compared with anastomotic recurrence and metachronous adenomatous polyps. The highest risk is in proximal resections vs. the distal ones.

W1990

Stool DNA Melting Curve Analysis of Methylated Promoters Is Sensitive and Specific for the Non-Invasive Early Diagnostic Tool for Colorectal Tumors

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INTRODUCTION: Stool DNA testing may be an alternative to colonoscopy for colorectal cancer screening and early diagnosis. AIMS & METHODS: The aim of the present study was to assess the clinical usefulness of a panel of methylation biomarkers in stool DNAMethods: We analyzed promoter methylation status of 5 tumor-related genes (RARB2, p16INK4a, MGMT, p14ARF and APC) in tissue and stool samples of 12 patients with newly diagnosed primary colorectal carcinoma and 20 patients with adenomas by MSP (training set). The same 5 promoters were analyzed by real time PCR temperature dissociation (Melting Curves) in tissue and stool samples of 28 patients with CRC, 23 patients with adenomas, 17 patients with inflammatory bowel disease and 20 healthy subjects (validation set) RESULTS: Training set showed that in tissue 83% of carcinomas (10 of 12) and 90% of adenomas 18 (of 20) were positive for at least one methylation marker. When analyzed stool DNA we found 75% of carcinomas (9 of 12) and 60% of adenomas (12 of 20) were positive for at least one methylation marker. Validation set showed that in tissue 79% of carcinomas (22 of 28) and 70% of adenomas (16 of 23) were positive for at least one methylation marker. When analyzed stool DNA we found 64% of carcinomas (18 of 28) and 42% of adenomas (9 of 23) were positive for at least one methylation marker. The specificity was 100% in both tissue and stool. CONCLUSION: The methylation panel of biomarkers showed in this study identifies specifically colonic premalignant and malignant neoplasic alterations with high sensitivity and very high specificity and can be used as a non-invasive early diagnostic tool for colorectal tumors.

W1991

Is Colonoscopy Screening Mandatory for Post-Ltx Recipients?

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INTRODUCTION: Liver transplantation (LTx) is being performed in a steadily increasing number of patients. Several malignancies are reported more often after LTx. In a Dutch LTx cohort an increased risk of colorectal cancer (CRC) was found compared to the general population (RR 12,5). However, other reports suggest that the overall incidence of CRC after LTx does not differ from the general population. AIMS & METHODS: The aim of our study was to evaluate the observed rate of CRC in a post-LTx cohort in an University Medical Center and compare these data with the general population. All medical records of LTx patients with a follow up of at least 3 months were used. Patients were excluded if CRC was diagnosed before LTx. PSC patients were evaluated separately because of the known increased risk of CRC. Variables including date of birth, medical history, type of immunosuppression, malignancies, and date and cause of death were documented. Incidence rate of the general Dutch population were retrieved from the Dutch Comprehensive Cancer Centre. RESULTS: 394 Patients (227 men (58%)) were included in the period 1986-2007. Colonoscopy or barium enema combined with sigmoidoscopy pre-LTx was performed in 89% of all patients with sub-acute or chronic liver failure. In patients with acute liver failure a bowel investigation was performed in only 48%. Median follow up after LTx was 5,1 years (range: 0,25-20 yrs). The mean age of the patients still alive was 52 years (SD 13 yrs). Overall mortality rate was 20,6% (81 deaths). The mean age of death among the non-survivals was 51 years (SD 13 yrs). Causes of death were divided into three categories: infection (26/81), malignancies (30/81) and other (25/81). During follow up, 72 patients (18%) developed one or more malignancies, including 24 patients with skin malignancies (6,1%) and 18 patients with lymphatic malignancies (3,6%). In total, 4 patients were diagnosed with CRC (1%). Two PSC patients developed CRC at 41 and 37 years while being under surveillance colonoscopy. Two other patients developed CRC at 65 and 55 years of age, respectively 17 and 1 year after LTx. None of these two patients had a bowel investigation prior to LTx. The expected incidence rate of CRC for this cohort using the general Dutch population incidence data was 2.72, compared to 4 observed cases (2 PSC cases). CONCLUSION: This study shows that malignancies occur often, but suggests that the incidence of CRC was not increased in a large cohort of LTx patients compared to the incidence in the general Dutch population. Based on our data it seems not reasonable to advise a different CRC screening or surveillance program for LTx patients.

W1992

Incidentally Detected Colonic Mass By FDG PET-CT

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BACKGROUND: 18F-FDG is highly uptaken in premalignant colorectal lesion and colorectal cancer. However, the reports regarding the clinical evaluation of incidental colonrectal FDG-uptake in PET-CT are very few. AIMS & METHODS: We evaluated incidental colorectal

lesions in PET-CT with colonoscopic finding and histologic finding. We performed a retrospective study of patients who underwent colonoscopy within 1 month after PET-CT from January 2006 to January 2008. The PET image obtained 1hour after F-18 FDG 15mCi injection and non-contrast CT images used for attenuation correction were fused for analysis. The intensity of FDG uptake was quantified using the maximal standardized uptake value (SUVmax). In the case of colonoscopic focal lesion, we reviewed the described location, size and histologic finding. RESULTS: Total 1092 patients were enrolled, except 778 patients who were previously conformed colorectal cancer. Of total 1092, incidental colorectal FDG-uptake foci were found in 64 (5.8%) patents. In 24 (37%) of 64 patients, the colonoscopic lesions were detected in the same location of incidental colorectal FDG-uptake (true positive) and remnant 40 (63%) patients were false positive. Among these lesions of 24 patients, 16 lesions were premalignant colorectal lesions or colorectal cancers (5 advanced adenomas that was larger adenoma than 1 cm size, villous tissue or high grade dysplasia, 11 colorectal cancer) and 8 lesions were small adenomas (5 patients) or hyperplastic polyps (3 patients). There was no difference of mean SUVmax between true-positive (SUVmax = 7.1) and false-positive (SUVmax = 7.2) colorectal FDG-uptake foci. CONCLUSION: In PET-CT, incidental colorectal FDG-uptake suggests the possibility of premalignant colorectal lesion and colorectal cancer, therefore it is necessary to confirm whether incidental colorectal FDG uptake focus is malignant or not with colonoscopy.

W1993

Mixed Hyperplastic-Adenomatous Polyps Are Distinct from Sessile Serrated Adenomas with Low-Grade Dysplasia

Richard H. Lash, Jason Schmidt, Christopher M. Schuler

Purpose: Understanding serrated polyps in the colon and the serrated pathway to colon cancer has been challenging. Polyps previously designated as mixed hyperplastic-adenomatous polyps (MHAPs) are now widely regarded as sessile serrated adenomas with low-grade dysplasia (SSALDs). Studies describing such lesions have been confusing partly because, we hypothesize, not all previously designated MHAPs are in fact SSALDs; rather we posit that true MHAPs exist and represent "collision" tumors of hyperplastic polyp (HP) and tubular adenoma (TA), distinct from SSALDs. **Methods:** We reviewed 357 colonoscopic polyp specimens diagnosed as either "mixed" or "combined" polyp or SSALD from 350 patients. Strict criteria were used to define MHAP and SSALD. Only polyps containing (in the same fragment) both classic hyperplastic polyp and tubular adenoma patterns were considered to be MHAP. SSALDs were classified per previously published histologic criteria. In addition, diagnostic reports from 75,253 patients with TAs and 61,962 patients with HPs in the Caris Diagnostics database were analyzed for comparison. **Results:** Upon review, polyps from 89 patients were excluded (most due to the presence of separate fragments of HP and TA), as were 4 cases of mixed hyperplastic polyp-adenoma with high-grade dysplasia. MHAPs were found in 79 patients (median age=60 yrs), while SSALDs were found in 182 patients (median age=66 yrs). This difference in median ages was significant (p=0.004). When specified, 68.5% of MHAPs were left-sided while only 19.6% of SSALDs were left-sided (p<.001). MHAPs were slightly more common in men (52%) while SSALDs were less common (43%) (ns). By comparison and unlike SSALDs, the median age of patients with MHAPLDs was between that of HPs and TAs (60 vs. 59 and 62), and the distribution MHAPLDs was between that of HPs and TAs (68.5% vs. 77.7% and 42% left-sided). Further, the proportion of men with MHAPs, HPs, and TAs was also similar (52% vs. 52.7% and 57.8%). **Conclusion:** MHAPs and SSALDs can be distinguished readily using specific pathologic criteria. MHAPs occur in significantly younger patients and are significantly more common in the left colon. MHAPs also occur more frequently in men, while SSALDs are more common in women. We conclude that MHAPs are clinically and pathologically distinct and appear more likely to represent a "collision" of hyperplastic polyp and tubular adenoma than a precursor lesion in the serrated pathway to colorectal carcinoma.

W1994

Effect of Age and Gender On Key Performance Indicators (KPIs) in a Population-Based FOBT Colorectal Screening Programme

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Introduction: Between March 2000 and May 2006 a demonstration pilot of biennial guaiac FOBT colorectal screening was carried out in North-East Scotland for all individuals aged 50-69. 304,245 invitations were issued in the first round, 309,803 in the second and 317,864 in the 3rd and uptake (%with an evaluable FOBT result) was 55%, 53% and 55.3% respectively. Positivity rates were 2.1%, 1.9% and 1.2%, and uptake of colonoscopy in those with a positive FOBT result was 85.5%, 89.5% and 81.3%. The cancer detection rates were 0.21%, 0.12% and 0.07% of those screened, and the adenoma detection rates were 0.65%, 0.52%and 0.28%. The PPVs (of a FOBT) for cancer were 12, 7 and 7.5% and for adenoma 36.5, 30.3 and 29.1%. The relevant populations were subdivided into eight categories according to gender and age at invitation (50-54, 55-59, 60-64, 65-69), and each of the KPIs re-analysed within these groups. Results: In all rounds, uptake of the FOBT increased significantly with increasing age (47% - 61%), and in both sexes (p<0.001), and uptake in women was significantly higher than in men in all age groups (p<0.001). However, neither age nor sex correlated with uptake of colonoscopy in those with a positive FOBT. Positivity rates increased with increasing age (1.1% - 3.6%) in both sexes in all rounds (p<0.001), and they were higher in men than in women for all age groups (p<0.001). Both cancer and adenoma detection rates increased with age and in both sexes in all rounds (p<0.01), and were consistently higher in men than in women in all age groups. The PPV for cancer and adenoma increased with age (30%-55%) in both sexes in all rounds (p<0.001) and was consistently higher in men than in women in all age groups (p<0.001). Conclusion: In this population-based colorectal screening programme, uptake, positivity and yield of neoplasia increased with increasing age suggesting that consideration should be given to extending the upper age-limit for population screening to beyond 69. Irrespective of age, uptake in women was greater than that in men, but both positivity and detection of neoplastic disease was greater in men, indicating that efforts to increase uptake in men of all ages are important to improve the performance of colorectal screening.

W1995

Artificial Neural Networks Allow Good Discrimination of Barrett's Esophagus from GERD On the Basis of Biographic, Clinical History, Symptoms and Lifestyle Habits

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Aim: The predictive ability of clinical variables in individual patients in the attempt to discriminate Barrett's esophagus (BE) from GERD is hampered by non linearity of parameters and variability among subjects. The net contribute of biographic data, clinical history, symptom profile and lifestyle habits with particular regard to dietary pattern in the potential discrimination is unknown. We present data of a large variable assembly obtained in a sizeable sample of BE and GERD patients and the use of Artificial Neural Networks(ANNs) in treating these variables. Material & Method: Data regarding ninety BE patients (66.6% male; mean age: 53.04 ± 14.07 years) and 128 GERD patients (67.1% male; mean age: 52.9 ± 14.18 years) were included in this analysis. One hundred forty four variables were entered into advanced ANNs, developed by Semeion Institute (Rome), able to select fundamental variables during their evolution in search of the best predictive model. Predictive results were validated with training - testing crossover procedures. The best ANNs were selected and their results analyzed with ROC curves. Results: The average values and distribution characteristics of the variables under study in the two groups were very close and not statistically different. The discriminant validity obtained with standard statistical approach (logistic regression) resulted to be poor either in term of sensitivity (60.6%) and specificity (60%) or in term of ROC curve AUC (0.63). The discriminating ability of the model obtained with ANNs on the contrary was high: the average AUC in 5 independent trials was equal to 0.80 (Figure 1). The best ANNs produces an AUC equal to 0.827. The final model was composed by 64 variables related to dietary pattern (N=34), smoking pattern (N=7), concomitant diseases (N=8), symptom profile (N=6), concomitant treatments (N=4) and biographic data (N=5). Conclusion: These results show that ANNs, able to treat complex and fuzzy information and to create non linear implicit functions in individual subjects allow a good discrimination between BE and GERD patients, thus supporting the hypothesis that BE has a complex but discernible clinical profile.

W1996

Analysis of Diagnostic Timing of Metachronous Adenomas in Colorectal Cancer

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INTRODUCTION: A high percentage of patients with colorectal cancer develops metachronous adenomas. Studies analysing the period of time between tumour resection and the diagnosis of consecutive generations of metachronous adenomas are scarce. AIMS: To evaluate the time period to the diagnosis of consecutive generations of metachronous adenomas and to compare diagnostic time interval of the first metachronous lesion in patients with and without previous synchronous lesions. MATERIAL AND METHODS: 382 patients with resected colorectal cancer and followed with total colonoscopy were analysed. Time between initial cancer resection and the diagnosis of first, second and third generations of metachronous adenomas was determined. Possible differences concerning diagnostic timing of the first metachronous adenoma depending on the presence of initial synchronous lesions were evaluated. Mann Whitney test was used for statistical analysis (statistical significance p<0.05). RESULTS: 208 out of 382 patients (54.5%) presented synchronous adenomas whereas 162 patients (42.4%) developed metachronous adenomas. Mean number of follow-up colonoscopies was 2.74±1.75 per patient. Median time of consecutive colonoscopies was 1st = 15 (months); 2nd = 32; 3rd = 46; 5th = 72; 6th = 85; 7th = 93 and 8th = 100 months. Median time to diagnosis was 21 months for the first generation of metachronous adenomas, 16 months for the second and 14 months for the third. In patients with synchronous adenomas, the first metachronous lesion was diagnosed significantly earlier (median: 19 months vs. 30 months; p = 0.011). CONCLUSIONS: 1.- Time interval to the diagnosis of metachronous lesions progressively decreases in consecutive adenomas generations. 2.- Time to diagnose the first metachronous adenoma is significantly shorter in patients with initial synchronous adenomas. 3.- Our results support the interest of an early first endoscopic control in patients with initial synchronous adenomas, after colorectal cancer resection.

W1997

Proximalization of Colorectal Polyps: How Is the Italian Context? a Ten-Year Study

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The majority of colorectal carcinomas arise from adenomatous polyps; for their management, diagnosis and endoscopic resection of adenomas is advised. Some authors reports a trend toward a right-shift of colonic neoplasm during the past decades. In a previous study we found no proximalisation of colorectal cancer. The aim of this study was to describe the distribution of adenomas and to assess eventual changes which might be suggestive for a right shift of polyps. Methods: Histological reports of colonoscopies carried out between 1997 and 2006 at Cuneo General Hospital were examined. We considered patients detected with at least one adenoma, (hyperplastic polyps excluded). Data recorded: age, gender, date of examination, number of polyps, site, size, histological type and grading. Adenomas located between the cecum and the splenic flexure were classified as proximal. Data were grouped into two five-years periods (1997-2001 and 2002-2006). Statistical significance was tested using Chi square tests; multivariable logistic models were fitted to study potential determinants of the distribution. Results: 1465 polypectomies (84.8 %) and 264 biopsies (15.2%) were included. Median age was 65.7 years (range 25th-75th percentile: 58-74) among men and 66.4 years (range 25th-75th percentile: 59-75) among women. The proportion of