resections and first operation due to colorectal cancer were included (n = 48 bone marrow, n = 39 blood, (28 sets of samples)). In 23% of these patients CK 20 cDNA was detected in bone marrow samples. The analysis indicated an increased detection rate correlating to the stage of disease (UICC classification). One positive result was detected in stage I (12.5%), 14.3% in stage II, 27.3% in stage III and 50% in stage IV. Survival of patients with positive findings in bone marrow was significantly shorter than in patients with a negative result for CK 20 ($p = 0.0011$). This could also be demonstrated for patients with equal tumor stages. Analysis of blood samples showed only 3 positive results (all corresponding bone marrow samples were also positive).

Conclusion: Cytokeratin 20 seems to be a marker for the detection of epithelial tumor cells in bone marrow. Our data demonstrate a correlation between the expression of CK 20 cDNA in bone marrow specimens and patients survival. The analysis in blood samples resulted in a lower detection rate.

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Evidence for different site-related genetic mechanisms in the pathogenesis of sporadic colorectal cancer

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Purpose: DNA tecnology is having an important role in the understanding of the pathogenetic mechanisms of colorectal cancer. The aim of the present study was to analyse some genetic alterations in sporadic colorectal carcinoma.

Methods: This study included 87 patients who underwent radical surgery for colorectal carcinoma. Allelic loss on chromosome 17p, mutation of p53 and k-ras, expression of c-myc were assessed for each tumor specimen and related to some clinicopathological variables.

Results: The frequency of deletion of 17p was higher in distal (90 9%) and rectal (71.9%) tumors than in the proximal ones (16.6%). Mutation of p53 was found to be more frequent in distal (76.0%) and rectal (64.7%) tumors than in the proximal ones (33.3%). Overexpression of c-myc was more frequent in distal (88.0%) and rectal (73.5%) tumors than in the proximal lesions (53.5%). Mutation of k-ras tended to be more frequent in rectal tumors (58.8%) than in the distal (32.0%) and proximal (39.2) ones.

Conclusions: The present study suggests that inactivation of tumor-suppressor genes and activation of oncogenes are involved in the carcinogenesis of distal and rectal tumors in sporadic colorectal cancer; on the contrary, the majority of proximal colon tumors seems to develop through different genetic changes.

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Influence of low dose sulindac on p53 proteins, on BCL-2 protein and on TGFα in rectal mucosa biopsies of cancer prone patients (FAP) in a chemopreventive trial

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Purpose: Influence on p53 proteins (wt/mut), on the apoptosis blocker *bcl*-2, and on tumour growth factor alpha (TGFα) are investigated to explain the antiproliferative effects of sulindac in a chemopreventive NSAID-trial on rectal adenomas and mucosa of familial adenomatous polyposis patients (FAP).

Methods: Ongoing, prospective, controlled, non-randomised phase II-dose finding study. Rectal sulindac application after colectomy and ileo-rectal anastomoses (study group:n = 28, control group:n = 10).18 months of immunohistochemical follow-up evaluable. Proliferation markers (MIB1, PCNA), p53, *bcl*-2, and TGFα stained on frozen/paraffin sections. p53 quantified using ELISA-kits.

Results: Obvious reduction in polyp counts, 78% complete adenoma reversions at last reexamination at 64 mg sulindac as mean daily dosis/person. Mucosal proliferation stabilization correlates to reduction of p53 proteins in untreated vs. treated mucosa (ANOVA, $p < 0.05$). *bcl*-2/p53 overexpression inversly correlates in adeno-matous mucosa of controls and microadenoma relaps. Insignificant changes of TGFα to reduction of sulindac doses.

Conclusions: Low-dose rectal sulindac is highly effective in maintaining adenoma reversion. p53 protein reduction and supposed induction of apoptosis via *bcl*-2-upregulation possibly stabilize mucosal proliferation. TGFα-expression as a proliferating stimulous of adenomatous tissue showed no dose related change.

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Clinical impact of immunoscintigraphy with ^{99m}Tc-labeled anti-cea Fab' in the follow-up of colorectal cancer patients: Prediction of surgical resectability from the combination with CT

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Purpose: Conventional radiological methods (e.g., CT) have only limited diagnostic accuracy. The aim of this study was to evaluate immunoscintigraphy with ^{99m}Tc-labeled anti-CEA Fab' (CEA-Scan®) alone and combined with CT in the follow-up of colorectal cancer patients.

Methods: At our department, 22 colorectal cancer patients were examined with CEA-Scan® (Immunomedics, Morris Plains, NJ, USA) during their postsurgical follow-up, using whole-body single photon emission computed tomography. All results were compared to those of CT. Final evaluation was performed in relation to postsurgical histology. The potential impact of immunoscintigraphy on the surgical management was analyzed with respect to a correct preoperative judgement of the patients' resectability. These data were compared to those of a multicenter trial involving 272 colorectal cancer patients (88 of them with occult disease).

Results: The lesion-based sensitivity of immunoscintigraphy was 94%, the diagnostic accuracy 92%. The sensitivity was independent of CEA serum levels. Less than 1% of patients developed HAMA. In the occult-disease group of the multicenter trial, the diagnostic accuracy was 93%. If CEA-Scan® and CT were concordant with respect to resectability, this judgement was correct in all cases, whereas in 88% of the discordant cases, the immunoscintigraphic result was correct. The combination of CEA-Scan® and CT improved the diagnostic accuracy from 83 to 93% ($p = 0.0005$).

Conclusion: These results show that CEA-Scan® is able to detect and localize recurrent colorectal cancer accurately. The use of antibody fragments avoids HAMA formation. The combination of immunoscintigraphy and conventional imaging procedures allows for an improved non-invasive estimation of surgical resectability.

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Accuracy of laparoscopic colorectal resection for cancer: A prospective multicenter study

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Laparoscopic colorectal surgery for cancer is presently under discussion. A prospective observational multicentre study was initiated on Aug. 1, 1995, in the German-speaking countries of Europe. We present the results after one year with respect to the accuracy and quality of oncological resections. Out of 500 operations, 231 (46%) were performed for cancer, 167 (33%) with curative intent. The mean age of the patients was 66 years (CI 5–95%: 64–68) and the male-to-female ratio was 1 0. The most common curative resections were: 63 anterior rectum resections (38%), 51 sigmoid resections (30%), and 27 amputations of the rectum (16%). Segmental resections were performed in 20 patients (11%) in selected indications. Intraoperative tumour spillage was reported in 2% Resection margins were tumour-free in every case. The mean number of lymph nodes harvested was 13.0 (CI 5–95%: 11.5 to 14.6), with significant differences between participating (Kruskal-Wallis, DF = 12, $p < 0.0001$). In the case of anterior resections, the mean distal resection margin was 39 mm (CI 5–95%: 33 to 45). Comparison of these results with recent data obtained by the German Study Group Colo-Rectal Carcinoma (SGCRC) for conventional colorectal surgery revealed no relevant differences between laparoscopic and open colorectal surgery in terms of the oncological quality criteria. The surgeon appears to be a risk factor in both surgical modalities. Since the incidence of port-site metastases and long-term survival after curative laparoscopic surgery for colorectal cancer are still unknown, we continue to recommend that such operations should not be performed outside the confines of a prospective study.