V100, prostate D90. The coefficient of variation (CV) of post-implant pvol was calculated from each slice interval. Then intra-observer variation was evaluated by comparing the CV for 1 mm and 5 mm intervals. The radiologist subjectively scored each image based on the quality of the CT images. Each image was assigned a score from 3 to 9 points (3 = poor, 6 = moderate, 9 = good).
Result: The mean planning TRUS pvol was 19.34±8.30 cc standard deviation (SD). The mean post-implant pvol by 1 mm slice was 18.75±6.68 cc, by 5 mm was 24.48±7.78 cc. The difference in mean values was 4.82 cc ($p < 0.05$). The mean ratio of post-implant: planning prostate V100 from 1 mm was 0.80±0.19, while that from 5 mm was 0.75±0.13. The difference in mean value was 0.06 ($p < 0.05$). The mean ratio of post-implant: planning prostate D90 from 1 mm was 0.70±0.20, while that from 5 mm was 0.62±0.15. The difference in mean value was 0.06 ($p < 0.05$). The mean coefficient of variation (CV) of post-implant pvol from 1 mm was 15.25±7.62%, while that from 5 mm was 8.81±4.23%. The difference in mean values was 7.79% ($p < 0.05$). The mean score of 1 mm was 5.11 and that of 5 mm was 7.22. The difference in mean values was 1.9 ($p < 0.01$).
Conclusion: The difference between post-implant pvol from 1 mm and 5 mm slice intervals significantly impacted the post-implant dosimetry. Because the prostate volume outlined by using 1-mm was smaller than that by using 5 mm, the prostate volume was underestimated; and therefore, the prostate V100 and D90 were overestimated.
The quality of CT images from 1 mm was significantly worse than that from 5 mm. The intra-observer variation (the coefficient of variation) of post-implant prostate volume from 1 mm was significantly greater than that from 5 mm. Using 5 mm slice intervals to outline the prostate is significantly more accurate and reproducible than using 1 mm slice intervals.

887 PUBLICATION

Postchemotherapy pelvic chemoradiotherapy for metastatic transitional cell carcinoma of the bladder

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Background: Intrapelvic sites of disease in patients with metastatic transitional cell carcinoma (TCC) of the bladder can be a source of significant morbidity. Consolidative radiotherapy (RT) has improved local control in other tumors with high local recurrence rates but has not been well studied in urothelial cancer. In this retrospective analysis, we report the efficacy, toxicity and pattern of failure of this approach.
Materials and Methods: Patients treated for stage IV TCC at the London Health Sciences Centre between January 1, 1996 and December 31, 2003, who had either had an unresected primary bladder tumor or pelvic recurrence or metastases, and who received consolidative pelvic chemoradiotherapy following at least a partial response to systemic chemotherapy were identified and their charts reviewed. Patients were excluded if RT was strictly of palliative intent following pelvic recurrence or progression. Primary outcomes of interest were the pelvic failure rate and time to pelvic failure. Secondary outcomes were time to disease progression, overall survival, pattern of first failure, pelvic morbidity and chemoradiotherapy toxicity.
Results: Twelve patients were identified and median followup was 15.6 months. Three patients relapsed in the pelvis, yielding a pelvic failure rate of 25%. The median time to pelvic failure was 12.8 months. Overall, nine patients developed progressive disease and died, with a median time to disease progression of 9.8 months. At last followup, three patients were alive and free of recurrent or progressive disease, with a median disease-free survival of 52.8 months. The median overall survival of all patients was 15.6 months. The major severe acute toxicity of chemoradiotherapy was myelosuppression; however, symptomatic cytopenias were infrequent. The most common acute non-hematologic toxicities were diarrhea and nausea. Five patients experienced chronic radiation toxicity. There were no life-threatening toxicities.
Conclusions: Consolidative chemoradiotherapy following systemic chemotherapy appears to be feasible and safe in selected patients, and may improve local disease control and reduce pelvic complications. Postchemotherapy chemoradiotherapy intended to reduce pelvic morbidity deserves further study in patients with metastatic TCC and pelvic involvement.

888 PUBLICATION

Commonly used serum tumor markers in patients with invasive urothelial cancer

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Background: No valid serum marker is currently used in patients (pts.) suffering from urothelial cancer. Moreover, only a few studies exist reporting data for the behavior of commonly used tumor markers in these pts. The circulating serum tumor markers CEA, Ca 125, Ca 19–9, β-HCG, and AFP have been measured in pts with invasive urothelial cancer.
Material and methods: 142 pts. with transitional-cell urinary bladder cancer entered this study. 56 pts had disease confined to the bladder ($T_{1-4a}N_0M_0$, clinical stages I, II, III), and 86 had metastatic disease (clinical stage IV). Thirty-three healthy volunteers constituted the control arm. Serum levels of CEA, Ca 125, Ca 19–9, β-HCG, and AFP were estimated prior to the therapeutic approach for all pts and during chemotherapy for the pts with metastatic disease.
Results: There was no correlation of all estimated tumor marker levels with tumor differentiation. Pts with high CA 19–9 and β-HCG levels showed unfavourable overall survival. A clear statistic difference has been found in all (except CEA) circulating tumor markers between the two groups of pts with local and metastatic disease (ANOVA t-test, CA 125, $p = 0.012$; CA 19–9, $p < 0.0001$; βHCG, $p = 0.011$; AFP, $p = 0.001$). Moreover, in the subgroup of patients with metastatic disease receiving chemotherapy, only β-HCG levels correlated with the response to treatment.
Conclusion: Among the commonly used serum tumor markers CEA, Ca 125, Ca 19–9, β-HCG, and AFP, only β-HCG seems to be a helpful marker indicating the neoplastic burden and chemotherapy response in pts with invasive bladder cancer.

889 PUBLICATION

Clinical results of high-dose-rate Iridium-192 brachytherapy combined with external beam radiotherapy for localized prostate cancer

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Background: In recent years, high-dose-rate (HDR) brachytherapy combined with external beam radiotherapy (EBRT) has come to perform for localized prostate cancer in Japan. The aim of this study is to report the clinical control rate of patients with HDR brachytherapy combined with EBRT for localized prostate cancer.
Material and methods: We enrolled 33 patients treated with HDR brachytherapy combined with EBRT between July 1999 and June 2002. Patient age ranged from 55 to 81 years (mean 73). Of the 33 patients, 9, 11, and 13 belong to low risk (stage <T2c, prostate-specific antigen (PSA) <10 ng/mL, and Gleason score <7), intermediate risk (stage <T3a, 10 ng/mL <PSA <20 ng/mL, and Gleason score <8), and high risk group (stage = T3, PSA >20 ng/mL, or Gleason score >7), respectively. Nine patients had received neoadjuvant hormonal therapy, which was stopped at the beginning of RT in all cases. Patients in this series were treated on two protocols. In the initial protocol, patients in high risk group were treated with HDR brachytherapy to 18 Gy in 3 fractions and whole pelvis EBRT to 45 Gy in 25 fractions, and patients in other groups were treated with HDR brachytherapy to 18 Gy in 3 fractions and prostatic EBRT to 40 Gy in 20 fractions. In the second protocol, patients were treated with HDR brachytherapy to 18 Gy in 3 fractions and prostatic EBRT to 40 Gy with an added staging lymphadenectomy to rule out lymph node metastasis for patients in high risk group. We used the American Society for Therapeutic Radiology and Oncology consensus definition for biochemical failure, and the Radiation Therapy Oncology Group (RTOG) guidelines for acute and chronic toxicities. Follow-up ranged from 36–71 months (median, 57 months).
Results: No patients in low and intermediate groups had biochemical failure. In high risk group, 2 patients had died of heart failure and malignant lymphoma, respectively, with no biochemical failure, one patient had died of distant metastasis, and 2 patient had bone metastases with no symptoms of local recurrence. Two patients experienced RTOG Grades 3 and 4 late radiation toxicities for the gastrointestinal system, respectively. Grade 3 urethral stricture was observed in 2 patients. Acute toxicity has been modest. Conclusions: HDR brachytherapy combined with EBRT is a very effective treatment for intermediate and high as well as low risk patients. However, in order to achieve more reliable results, additional long-term follow-up is required.