

Results: Radiotherapy was performed after a median time of 4.2 months following spinal cord injury. After a mean follow up of 15.8 months (median 10.5 months) x-ray showed a sharply outlined ossification without increase in heterotopic bone formation. In all patients, normalization of Alkaline phosphatase was obtained. No relevant adverse effects were observed.

Conclusion: Our results suggest that single dose irradiation is an effective local treatment option for spinal cord injured patients with heterotopic ossification in the hips. In all patients an adequate sitting position could be achieved.

953 POSTER The effect of melatonin on radiation-induced hepatic damage in rats

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Background: The present study was undertaken to investigate the possible protective effect of melatonin against radiation-induced hepatic toxicity in rats.

Materials and Methods: Irradiation consisted of a single dose of 8 Gy (source to skin distance 80 cm) to the total body of the animals. Melatonin or vehicle (ethanol, 20%) was administered immediately before, right after and 24 h after irradiation to the rats (melatonin dose: 10 mg/kg, 20 mg/kg and 10 mg/kg, ip, respectively) (The experimental groups are shown in Table 1). 48 h after irradiation, all animals were sacrificed using ketamine. Tissue samples were obtained to determine hepatic malondialdehyde (=MDA; a marker of lipid peroxidation), glutathione peroxidase (=GPx; antioxidative enzyme) and glutathione S-transferase (=GST; antioxidative enzyme) activities.

Differences between groups were statistically analysed by one-way analysis of variance (ANOVA). Post-hoc tests were done by using a multiple comparison procedure (Tukey Test). Statistical significance was accepted as $p < 0.05$.

Results: The MDA levels in the hepatic tissue were found to be significantly higher in group 2 when compared to control group ($p < 0.05$). Treatment with melatonin significantly decreased the MDA levels compared to group 2 ($p < 0.05$).

There was no significant difference in hepatic GPx activity between the control group and the irradiated group (group 2). After melatonin administration to the irradiated rats (group 3), hepatic GPx activity was found to be increased significantly when compared to group 2 ($p < 0.05$). GST activity in the hepatic tissue was found to be significantly higher in the irradiated group 2 and 3 when compared to control group ($p < 0.05$).

Conclusion: The increase in MDA levels demonstrate the role of oxidative mechanisms in irradiation-induced hepatic tissue damage. On the other hand the activities of GPx and GST were elevated after melatonin administration. Melatonin has beneficial effects on hepatic damage in total body irradiation through the oxidative process.

| Groups | Total Body Irradiation (8 Gy) | Ethanol 20% | Melatonin |
|------------|-------------------------------|-------------|-----------|
| 1(control) | - | - | - |
| 2 | + | + | - |
| 3 | + | - | + |

954 POSTER The palliative effect of endobronchial brachytherapy for previously irradiated lung cancer patients

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Background: To evaluate the palliative effect of endobronchial brachytherapy (EBB) for patients who previously received the external beam radiotherapy (EBRT).

Materials and Methods: From July 1992 to May 2003, 29 patients with recurrent or persistent non-small cell lung cancer (NSCLC) were treated with palliative EBB at our institute. EBB consisted of 3 fractions (once a week) of 5 Gy, delivered 1 cm from source using the high dose rate remote afterloader. The symptomatic response rates were assessed. And the factors, such as age, performance status, previous EBRT dose, elapsed

time from EBRT to EBB, the extent of endobronchial tumor, and the degree of occlusion were compared between symptomatic responders and non-responders.

Results: Median age was 62 years (46–71 years). Eastern Cooperative Oncology Group (ECOG) performance scale 1, 2, 3 was 13, 15, 1 patient respectively. Total dose of previous EBRT was median 54 Gy (45–63 Gy) with daily dose of median 2.5 Gy (1.8–3 Gy). Elapsed time from EBRT to EBB was median 7 months (1–102 months). 22 patients complained of 2 or more symptoms caused by endobronchial tumor. Type of symptoms were cough ($n = 22$), dyspnea ($n = 16$), hemoptysis ($n = 11$), obstructive pneumonia ($n = 3$) and chest pain ($n = 1$). The extent of tumor was to the distal trachea in 15 and to the main bronchus or lobar bronchus in 14 patients. 19 patients (66%) had nearly total (more than three quarter of the lumen) or total occlusion by tumor at first EBB. Median follow up was 6 months (1–34 months). Only 2 patients could not complete the scheduled treatment. The overall symptomatic response rates were 51% (27/53). Response rates as to the type of symptoms were 41% for cough, 50% for dyspnea, 82% for hemoptysis, and 33% for obstructive pneumonia. Of the type of symptoms, hemoptysis was better relieved than cough (Fisher's exact test, $p < 0.05$). The median time to symptom relapse was 6 months (3–31 months). 17 (59%) patients (symptomatic responders) were relieved from all or part of symptoms after or during EBB and 12 (41%) patients (non-responders) were not relieved from their symptoms at all. The symptomatic responders had better performance status (ECOG 1) or more tumor extent to distal trachea than non-responders. And the difference was significant statistically (Fisher's exact test, $p < 0.05$). Bronchopleural fistula was developed in 2 patients (7%) and one of them died of the complication.

Conclusions: The overall symptomatic response rates were 51% and the response maintained for 6 months. Palliative EBB, even though EBRT was given previously, could be effective especially if a patient has the symptom, such as hemoptysis caused by distal tracheal lesion.

955 POSTER Management of CNS malignancies treatment outcome in patients referred to CRP

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Background: The author characterise central nervous system malignancies population referred to radiation treatment in Clínica de Radioterapia do Porto – Portugal.

Material and Method: This cohort represents all patients with CNS malignancies submitted to radiotherapy between March 2002 and November 2005. The cohort was retrospectively analyzed for gender distribution, age, initial KPS, tumour grade, extent of surgical resection, time between surgery and radiotherapy, radiation treatment, survival, and toxicity.

Results: 163 patients (95 females and 68 males) with CNS malignancies (118 high grade tumour, 17 low grade tumour and 28 other tumour), were treated in adjuvant setting after surgery. The median age was 58 years (13–85) and 115 patients had a KPS ≥ 70 before treatment. 149 patients underwent major tumour resection (31 complete, 119 partial resection) and 14 biopsy (2 stereotactic). The median time between surgery and radiation was 27 days (ranging 8 to 176). 124 patients received radiotherapy, 5 of which followed by adjuvant temozolomide (30 cycles), and 38 received radiotherapy plus concomitant and adjuvant temozolomide (181 cycles). Median radiation dose was 56 Gy (ranging 4–76). 103 received 3D radiation technique and 58 2D. 6 patients had grade III/IV haematological toxicity (2 leucopenia during single radiotherapy, 2 leucopenia and 1 thrombocytopenia during radiation and chemotherapy treatment and 1 anaemia).

Conclusions: Radiation treatment is a feasible therapy option with acceptable toxicity levels. Good compliance to radiotherapy was observed in this cohort. Response to treatment is consistent with previous reported data.