

Retrospective clinical evaluation of painful bone metastases treated with radiofrequency ablation alone or combined with cement injection

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Abstract

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Abstract

Introduction

25% of cancer patients experience pain at the stage of cancer diagnosis, 50% during cancer treatment and 80% in the advanced-terminal phase. The physician treating cancer patients must be able to manage pain early and be able to treat it appropriately. Despite a correct therapeutic approach, between 5% of patients suffer from persistent and intractable pain. Bone lesions are clinically responsible for a series of skeletal-related events (SREs). Radiofrequency Ablation of bone metastases is gaining an important role in the oncological pathway of patients with bone metastases. The combination of RFA and percutaneous cement injection provides, in addition to pain relief, bone strengthening in patients with pathological fractures.

Materials and Method

Between 2019 and 2021, 44 patients (20 m and 24 f) with symptomatic bone metastases were treated with RFA alone or combined with cement injection under CT guidance. The aim of the retrospective single-center study was to investigate the pain relief. The following scores were analyzed: NRS measured preoperatively, 1, 3 days and 3 and 6 months after the procedure, ODI index preoperatively and after 1 month from the procedure, EORTC QLQ-C30 preoperatively and after 1 month of the procedure.

Results

The mean age was 66 years old (M = 66, SD = 10) and multiple myeloma was the most common type of tumor (n=16, 36%) followed by breast cancer (n=11, 25%) and lung cancer (n=8, 18%). The most frequent metastatic site was the lumbar spine and iliac wings. In all patients enrolled in the study, the mean (95% CI) NRS scores had reduced from 8.0 (7.7, 8.3) to 3.7 (3.4, 4.1) after 24 hours from treatment (reduction was statistically significant, $p < 0.001$) and to 3.4 (3.0, 3.8) after 72 hours from treatment ($p = 0.08$ compared to NRS score at 24 hours after treatment; Fig. 2). A further significant reduction was observed between 72 hours and 2 weeks after treatment ($p < 0.001$). Six months after treatment, the mean (95% CI) NRS score was 2.4 (2.0, 2.8). There was a significant decrease in the ODI score before and one month after the interventional treatment ($p < 0.001$, Fig. xx). Mean (95% CI) ODI score changed from 62.8 (60.9, 64.7) before RFA to 28.0 (25.7, 30.3) after 1 month. The quality of life was assessed with the EORTC questionnaire. Before RFA, mean (95% CI) EORTC 1-28 score was 69.1 (67.9, 70.3) and this significantly decreased ($p < 0.001$) to 50.5 (48.6, 52.3) one month after the interventional treatment (Fig. xx). EORTC 29-30 score significantly increased ($p < 0.001$) from 4.8 (4.5, 5.2) to 5.6 (5.4, 5.9).

Conclusions

RFA has emerged as a successful approach as a palliative strategy. Radiotherapy and chemotherapy are first-line treatments for bone metastasis. The advantages of RFA include the minimally invasive nature, a short hospitalization, low complication rates, no interruption of systemic chemotherapeutic agents. In our experience, radiofrequency ablation with or without combined cement injection in patients with cancer pain related to bone metastases has been demonstrated as a safe and effective palliative treatment.

References

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