Int. J. Radiation Oncology Biol. Phys., Vol. 78, No. 5, pp. 1467–1473, 2010

0360-3016/$–see front matter

ELSEVIER

doi:10.1016/j.ijrobp.2009.09.038

CLINICAL INVESTIGATION **Central Nervous System**

MULTIMODAL APPROACH TO THE MANAGEMENT OF METASTATIC EPIDURAL SPINAL CORD COMPRESSION (MESCC) DUE TO SOLID TUMORS

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Purpose: To assess the impact of a multidisciplinary approach for treatment of patients with metastatic epidural spinal cord compression in terms of feasibility, local control, and survival.
Methods and Materials: Eighty-nine consecutive patients treated between January 2004 and December 2007 were included. The most common primary cancers were lung, breast, and kidney cancers. Ninety-eight surgical procedures were performed. Radiotherapy was performed within the first month postoperatively. Clinical outcome was evaluated by modified visual analog scale for pain, Frankel scale for neurologic deficit, and magnetic resonance imaging or computed tomography scan. Nearly all patients (93%) had back pain before treatment, whereas major or minor preoperative neurologic deficit was present in 62 cases (63%).
Results: Clinical remission of pain was obtained in the vast majority of patients (91%). Improvement of neurologic deficit was observed in 45 cases (72.5%). Local relapse occurred in 10%. Median survival was 11 months (range, 0–46 months). Overall survival at 1 year was 43.6%. Type of primary tumor significantly affected survival.
Conclusions: In patients with metastatic epidural spinal cord compression, the combination of surgery plus radiotherapy is feasible and provides clinical benefit in most patients. The discussion of each single case within a multidisciplinary team has been of pivotal importance in implementing the most appropriate therapeutic approach.

Metastatic spinal cord compression, Radiotherapy, Surgery, Solid tumor, Multimodal treatment.

INTRODUCTION

Spinal involvement from solid tumors represents a major clinical problem, adversely affecting a patient's quality of life and outcome (1) (Fig. 1). In particular, metastatic epidural spinal cord compression (MESCC) is a medical emergency occurring in up to 10% of patients with cancer (2–4), being second only to brain metastasis as the cause of neurologic dysfunction (5). If untreated, MESCC is a source of significant morbidity and death, causing pain, paralysis, incontinence, and an overall decline in the patient's performance status (6, 7). However, when diagnosis and treatment are performed early, the likelihood of maintaining the ability to walk is improved (8).

In the past, surgery for MESCC has been controversial because of the limitations of laminectomy (9–13), which has been—for decades—the only surgical procedure performed. Laminectomy is inadequate when spinal metastases are located within the vertebral body, as occurs in most cases. In these circumstances laminectomy not only does not remove the tumor but also causes instability (12). Since the 1980s, improvements in surgical techniques, by several approaches and with the advent of spinal implants, have allowed better removal of the tumor with immediate spinal cord decompression, along with the possibility of reconstructing and stabilizing the spine during the intervention (14, 15). This has made the surgical approach more widely used.

Despite new developments in surgical procedures, radiotherapy (RT) has remained the most widely used modality for the treatment of spinal metastatic disease (4, 14, 16–18). In patients with radiosensitive tumors, it provides pain relief and an improvement of motor function, above all in patients able to walk before the start of treatment (19). Although RT plays an important role in the treatment of MESCC, in

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Conflict of interest: none.
Received Aug 12, 2009, and in revised form Sept 24, 2009. Accepted for publication Sept 28, 2009.

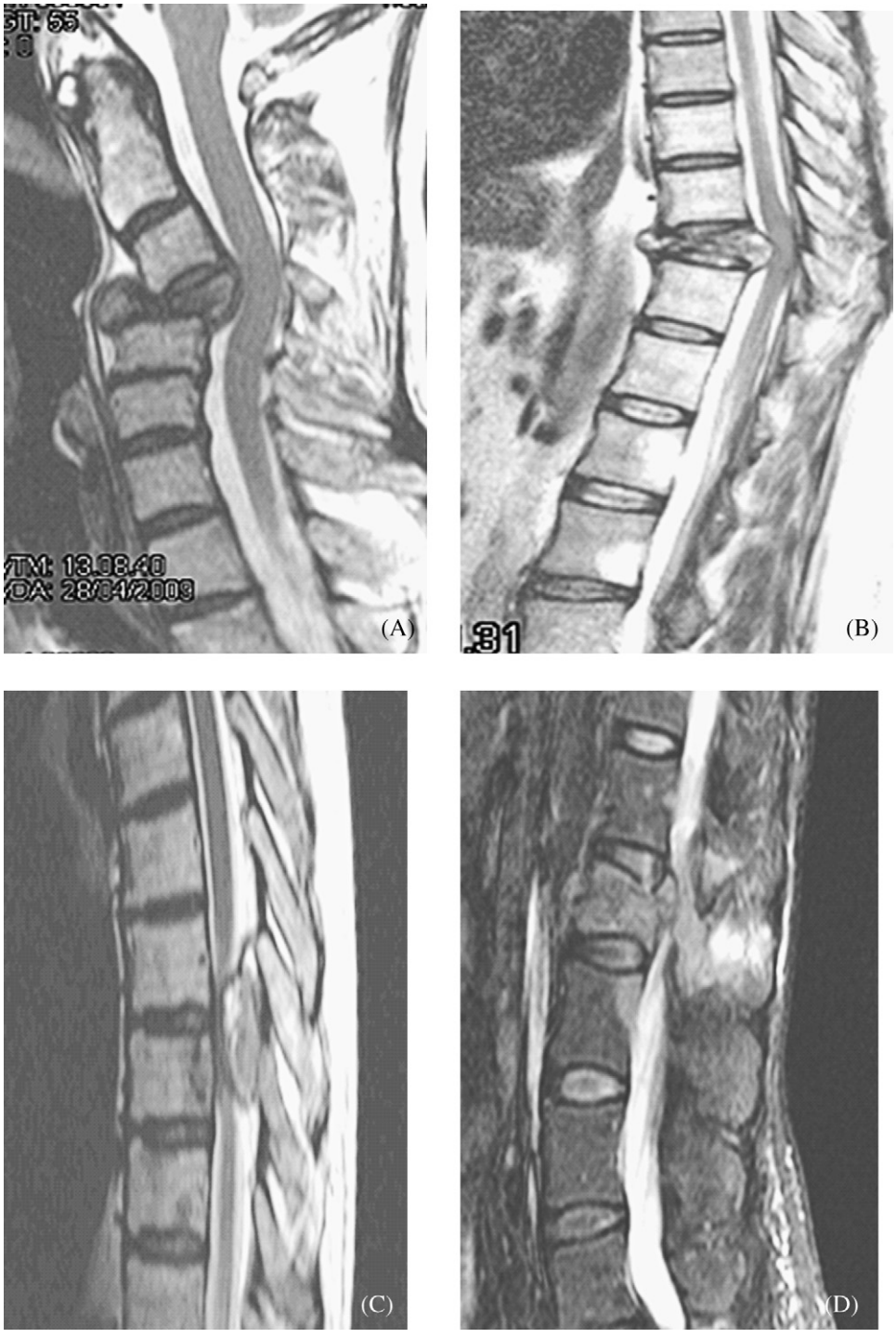

Fig. 1. (A) fracture and compression in cervical spine. (B) fracture and compression in dorsal spine. (C) posterior compression from solid mass. (D) fracture and compression in lumbar spine.

poorly radiosensitive or large tumors, it only halts growth temporarily (7).

Several retrospective studies have advocated the use of surgical decompression and stabilization to improve the results obtained from radiation alone (13–15), but only limited information has been published regarding the systematic combination of surgery followed by RT. The choice of the best treatment for individual patients is rather complex, and the therapeutic program should be directed to a careful evaluation of several prognostic factors including type of primary tumor, extent of disease (presence of visceral metastases), overall clinical condition, symptoms, and life expectancy of patients (20). Significant advances in the understanding and management of MESCC have occurred (21–24), but there are no accepted worldwide guidelines on their implementation. We believe that the key element for successful treatment of MESCC is multidisciplinary care of the patient, which includes all of those prognostic factors that have been, until