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Clinical Study

Surgery for metastatic spine tumors in the elderly. Advanced age is not a contraindication to surgery!

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Abstract **BACKGROUND:** With recent advances in oncologic treatments, there has been an increase in patient survival rates and concurrently an increase in the number of incidence of symptomatic spinal metastases. Because elderly patients are a substantial part of the oncology population, their types of treatment as well as the possible impact their treatment will have on healthcare resources need to be further examined.

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PURPOSE: We studied whether age has a significant influence on quality of life and survival in surgical interventions for spinal metastases.
STUDY DESIGN: We used data from a multicenter prospective study by the Global Spine Tumor Study Group (GSTSG). This GSTSG study involved 1,266 patients who were admitted for surgical treatments of symptomatic spinal metastases at 22 spinal centers from different countries and followed up for 2 years after surgery.
PATIENT SAMPLE: There were 1,266 patients recruited between March 2001 and October 2014.
OUTCOME MEASURES: Patient demographics were collected along with outcome measures, including European Quality of Life-5 Dimensions (EQ-5D), neurologic functions, complications, and survival rates.
METHODS: We realized a multicenter prospective study of 1,266 patients admitted for surgical treatment of symptomatic spinal metastases. They were divided and studied into three different age groups: <70, 70–80, and >80 years.
RESULTS: Despite a lack of statistical difference in American Society of Anesthesiologists (ASA) score, Frankel neurologic score, or Karnofsky functional score at presentation, patients >80 years were more likely to undergo emergency surgery and palliative procedures compared with younger patients. Postoperative complications were more common in the oldest age group (33.3% in the >80, 23.9% in the 70–80, and 17.9% for patients <70 years, p=.004). EQ-5D improved in all groups, but survival expectancy was significantly longer in patients <70 years old (p=.02). Furthermore, neurologic recovery after surgery was lower in patients >80 years old.
CONCLUSIONS: Surgeons should not be biased against operating elderly patients. Although survival rates and neurologic improvements in the elderly patients are lower than for younger patients, operating the elderly is compounded by the fact that they undergo more emergency and palliative procedures, despite good ASA scores and functional status. Age in itself should not be a determinant of whether to operate or not, and operations should not be avoided in the elderly when indicated.

Keywords: Elderly; Emergency; Neurologic prognosis; Quality of life; Scheduled surgery; Spine compression; Spine metastasis

Introduction

Cancer treatments have continuously improved, resulting in higher patient survival rates. Therefore, patients with advanced stage cancer live longer, but the number of incidence of spinal metastases increases [1,2]. Furthermore, the "elderly" are a steadily growing population group in high-income countries.

Spinal metastasis with or without cord compression are a debilitating and common complication of cancer. More than 20,000 new cases are reported every year in the United States [3–5]. In 5–14% of patients, cancer metastasizes commonly to the spine and leads to spinal cord compression, cauda equina syndrome, and paraparesis [3], but the incidence of spinal metastases in patients with cancer at postmortem examination is much higher [6].

To demonstrate the effect of age on outcomes and complications, we analyzed data from a large multicenter international prospective cohort study of 1,266 patients undergoing surgery for spinal metastases. This study was conducted by the "Global Spine Tumor Study Group" (GSTSG), an international group of spinal surgeons [6].

Methods

The GSTSG conducted an international multicenter study of 1,266 patients who were admitted for surgery to treat symptomatic spinal metastases at 22 international orthopedic and neurosurgical spinal units. Data were collected on a secure Internet database designed by the GSTSG. The centers were in Belgium, Canada, China, Denmark, France, Germany, Japan, The Netherlands, South Korea, Spain, the United Kingdom, and the United States of America. The database was hosted on computer servers managed by the data-management company, Giant Systems Limited (Leeds, UK), with secure socket layer encryptions. Anonymized data were prospectively entered when patients were admitted to the hospital, and at subsequent follow-up visits. Local institutional ethical regulatory approval was granted for all centers.

The patients were recruited between March 2001 and October 2014. Patient details were locked 4 weeks after initial data entry, and data were downloaded for analysis in October 2014. For this study, follow-up was from recruitment up to death or 2 years after surgery. Research participants' consents were required to allow anonymized data collection and storage, but otherwise treatment and follow-up did not vary from the standard provided at each center. Patients were excluded if they were unable to consent because of learning disabilities, unconsciousness, mental illness, or age <18 years.

Variables

Preoperative data

The preoperative data for this study were type of tumor, neurologic status, functional status, pain, Karnofsky score,