Agreement in the assessment of metastatic spine disease using scoring systems

Estanislao Arana [a,b,c] , Francisco M. Kovacs [c,d] , Ana Royuela [c,e,f] , Beatriz Asenjo [c,g] , Ursula Pérez-Ramírez [c,h] , Javier Zamora [c,e,f,i] , and the Spanish Back Pain Research Network Task Force for the improvement of inter-disciplinary management of spinal metastasis

[a]Department of Radiology, Valencian Oncology Institute Foundation, Valencia;

[b]Research Institute in Health Services Foundation, Valencia;

[c]Spanish Back Pain Research Network, Kovacs Foundation;

[d]Scientific Department, Kovacs Foundation, Palma de Mallorca;

[e]CIBER Epidemiology and Public Health (CIBERESP);

[f]Clinical Biostatistics Unit, Hospital Ramón y Cajal, IRYCIS, Madrid;

[g]Department of Radiology, Hospital Regional Universitario Carlos Haya, Málaga;

[h]Center for Biomaterials and Tissue Engineering, Universitat Politècnica de València, Valencia, Spain;

[i]Barts and the London School of Medicine & Dentistry. Queen Mary University of London, London, UK

Abstract

Purpose: To assess variability in the use of Tomita and modified Bauer scores in spine metastases.

Materials and methods: Clinical data and imaging from 90 patients with biopsy-proven spinal metastases, were provided to 83 specialists from 44 hospitals. Spinal levels involved and the Tomita and modified Bauer scores for each case were determined twice by each clinician, with a minimum of 6-week interval. Clinicians were blinded to every evaluation. Kappa statistic was used to assess intra and inter-observer agreement. Subgroup analyses were performed according to clinicians' specialty (medical oncology, neurosurgery, radiology, orthopedic surgery and radiation oncology), years of experience (67, 8–13, P14), and type of hospital (four levels).

Results: For metastases identification, intra-observer agreement was ''substantial'' ($0.60 < k < 0.80$) at sacrum, and ''almost perfect'' ($k > 0.80$) at the other levels. Inter-observer agreement was ''almost perfect'' at lumbar spine, and ''substantial'' at the other levels. Intra-observer agreement for the Tomita and Bauer scores was almost perfect. Inter-observer agreement was almost perfect for the Tomita score and substantial for the Bauer one. Results were similar across specialties, years of experience and type of hospital. Conclusion: Agreement in the assessment of metastatic spine disease is high. These scoring systems can improve communication among clinicians involved in oncology care.