

**KORELASI SPINAL INSTABILITY NEOPLASTIC SCORE DENGAN
DERAJAT METASTASTIC SPINAL CORD COMPRESSION PADA PASIEN
KANKER PAYUDARA METASTASIS TULANG BELAKANG
MENGUNAKAN MAGNETIC RESONANCE IMAGING**

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INTISARI

Latar Belakang: Kanker payudara merupakan kanker paling banyak pada perempuan dan sering bermetastasis ke tulang belakang, menyebabkan *metastatic spinal cord compression* (MSCC). MRI *total spine* menjadi modalitas utama untuk deteksi dini MSCC dan mengevaluasi nilai *Spinal Instability Neoplastic Score* (SINS) untuk menilai ketidakstabilan tulang belakang akibat metastasis dan membantu pengambilan keputusan klinis yang tepat pada pasien dengan keterlibatan spinal.

Tujuan: Mengetahui korelasi antara *Spinal Instability Neoplastic Score* (SINS) dan derajat *metastatic spinal cord compression* (MSCC) pada pasien kanker payudara dengan metastasis tulang belakang dengan menggunakan *Magnetic Resonance Imaging*

Metode: Penelitian ini merupakan penelitian analitik observasional dengan desain cross sectional, dilakukan di RS. Dr. Sardjito Yogyakarta pada bulan Maret hingga Juni 2025. Data retrospektif subjek penelitian diperoleh dari rekam medis pasien kanker payudara yang dilakukan pemeriksaan MRI *total spine* pada bulan Mei 2023 hingga Juni 2025. Skor SINS didapat melalui pengukuran dan penilaian pada enam variabel terkait tulang belakang yang mengalami lesi neoplastik berupa lokasi lesi (skor 0-3), karakteristik nyeri (skor 0-3), tipe metastasis (skor 0-2), kesejajaran tulang belakang (skor 0-2), tingkat kerusakan corpus tulang belakang (skor 0-3), dan keterlibatan elemen posterolateral tulang belakang (skor 0-2). Sistem grading MSCC terdiri dari 6 tingkatan yang ditetapkan sesuai dengan klasifikasi Bilsky.

Hasil: Penelitian terhadap 66 pasien kanker payudara dengan metastasis tulang belakang menunjukkan bahwa mayoritas subjek memiliki rentang usia antara 41-60 tahun (56,1%), Skor SINS potensial tidak stabil (56,1%), dan MSCC grade 3 (42,4%). Terdapat korelasi signifikan antara skor SINS dengan derajat MSCC ($p < 0,001$, $r = 0,633$).

Kesimpulan: Terdapat korelasi positif yang signifikan antara skor SINS dengan derajat MSCC pada kanker payudara metastasis tulang belakang yang dievaluasi menggunakan modalitas MRI *total spine* (semakin berat derajat MSCC maka semakin tinggi skor SINS)

Kata kunci: kanker payudara; metastasis tulang belakang; skor SINS; MSCC; MRI *total spine*

CORRELATION BETWEEN THE SPINAL INSTABILITY NEOPLASTIC SCORE AND THE DEGREE OF METASTATIC SPINAL CORD COMPRESSION IN BREAST CANCER PATIENTS WITH VERTEBRAL METASTASES USING MAGNETIC RESONANCE IMAGING

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ABSTRACT

Background: Breast cancer is the most common malignancy among women and frequently spread to the spine, resulting in metastatic spinal cord compression (MSCC). Total spine MRI is the primary modality for early detection of MSCC and for assesing Spinal Instability Neoplastic Score (SINS) to evaluate spinal instability due to metastasis, supporting optimal clinical management in patients with spinal involvement.

Objective: To evaluate the correlation between the Spinal Instability Neoplastic Score and the degree of metastatic spinal cord compression in breast cancer patients with spinal metastases using Magnetic Resonance Imaging

Methods: This study is an analytical observational research with a cross-sectional design, conducted at Dr. Sardjito Hospital Yogyakarta from March to June 2025. Retrospective data were obtained from medical records of breast cancer patients who underwent total spine MRI examinations from May 2023 to June 2025. The SINS score was assessed based on six variables related to neoplastic spinal lesions: lesion location (score 0–3), pain characteristics (score 0–3), type of metastasis (score 0–2), spinal alignment (score 0–2), degree of vertebral body collapse (score 0–3), and involvement of the posterolateral spinal elements (score 0–2). MSCC grading was categorized into six levels according to the Bilsky classification

Result: A study of 66 breast cancer patients with spinal metastases revealed that the majority were aged between 41–60 years (56.1%), had potentially unstable SINS scores (56.1%), and presented with grade 3 MSCC (42.4%). A significant correlation was found between SINS and MSCC grade ($p < 0.001$, $r = 0.633$).

Conclusion: There is a significant positive correlation between the Spinal Instability Neoplastic Score (SINS) and the degree of Metastatic Spinal Cord Compression (MSCC) in breast cancer patients with spinal metastases, as evaluated using total spine MRI. A higher MSCC grade is associated with a higher SINS score.

Keywords: Breast cancer; Spinal metastasis; Spinal Instability Neoplastic Score (SINS); Metastatic Spinal Cord Compression (MSCC); Whole-spine MRI.