The Impact of Early Surgical Intervention for Spinal Epidural Abscesses

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Introduction

One often overlooked aspect of spinal epidural abscesses is the timing of surgical management. Limited evidence is available correlating earlier intervention with outcomes.

Methods

A retrospective review of a prospectively maintained adult neurosurgical database from 2009 – 2011 was conducted for patients with the diagnostic heading:epidural abscess, infection, osteomyelitis, osteodiscitis, spondylodiscitis, and abscess. The primary endpoint for each patient was neurologic grade, measured as an ASIA Grade using hospital inpatient records on admission and discharge. Patients were divided into early surgical (<24 hours) and delayed surgical cohorts.

Results

87 consecutive patient were identified (25 female, mean 55.5, 18-87). 53 patients had received surgery within 24 hours of admission (mean time from admission to incision, 11.2 hours), with 33 having surgery greater than 24 hours (mean 59 hours). 45 out of 53 patients undergoing early surgery had a neurologic deficit (85%), whereas in delayed surgery 21 out of 33 patients presented with a neurologic deficit (64%, P=0.09). Patients in the delayed surgery cohort were significantly older by ten years (59.6 vs. 51.8, P=0.01). With regards to history of prior revision, BMI, intravenous drug abuse, tobacco use, prior radiation, diabetes, chronic systemic infection, and prior known osteomyelitis, there were no significant differences (Table 1). There was no significant difference between early and delayed surgery groups in neurologic grade on presentation (Table 2), discharge (Table 3), or location of epidural abscess (Table 4A-B). The most common organism isolated was staphylococcus aureus (n=51, 59.3%). The incidence of MRSA was 21% (18/86).

Conclusions

Evacuation within 24 hours appeared to have a relative advantage over delayed surgery with regard to discharge neurologic grade. However, due to a limited, variable sample size, a significant benefit could not be shown. Further subgroup analysis with larger populations are required.

Neurological Grade at Time of Discharge

TABLE : Neurological grade at time of discharge*

AIS Grade	<24 Hrs	>24 Hrs	p Value
A	2	3	0.98
B	1	0	0.89
C	6	3	0.87
D	20	13	0.42
E	25	11	0.27
improvement (raw score/no. of patients)†	+0.41	+0.39	0.17

* Values are number of patients unless indicated otherwise. Three patients did not undergo examination at discharge.

† 1= AIS Grade A (complete injury), 5 = AIS Grade E (neurologically Intact).

Patients admitted prior to 24 hours demonstrated a greater improvement at the mean time of discharge (0.41 versus 0.39), however, statistical significance was not met (P=0.27).

Learning Objectives

By the conclusion of this session, participants should be able to: 1)Understand the risk factors of spinal epidural abscesses. 2)Understand the relative outcomes of early versus delayed surgery for spinal epidural abscesses.

References

1. Adogwa O, Karikari I, Carr K, et al. Spontaneous Spinal Epidural Abscess in patients 50 years of age and older: a 15-year institutional perspective and review of the literature. J Neurosurg Spine. 2014 Mar;20(3):344-9.