

Introduction

Epidural injections of steroid or anesthetic can be effective for pain relief in appropriately selected patients, but severe neurosurgical complications can rarely occur. The purpose of this study is to define the spectrum of complications that can occur, how to treat them, and any pitfalls which may have led to the complication.

Methods

A prospectively maintained database of 27,000 neurosurgical admissions over 14 years was reviewed to identify all patients who had suffered major complications from definitively related to an ESI in the lumbar or cervical spine

Results

There were a total of 18 patients who had experienced major neurosurgical complications associated with epidural injections, accounting for 0.64% of all neurosurgical admissions. There were three broad categories of complication: hemorrhagic (n=11), infectious (n=4), and CSF-related (n=2). There was significantly greater association with a history of anticoagulation use among patients with hemorrhagic vs. nonhemorrhagic complications (p<0.01, Fisher’s exact test). Four patients who developed epidural hematoma had been managed in accordance with the 2014 ASRA guidelines, either after cessation of anticoagulation (n=2) or were taking aspirin only prior to the procedure (n=2). Four infections were identified, and none of the patients were treated with prophylactic antibiotics. The CSF-related cases consisted of diffuse pneumocephalus (n=1) and acutely symptomatic colloid cyst (n=1).

Learning Objectives

- 1)Describe the importance in perioperative management of patients on antioagulation or anitplatelet medications.
- 2)Discuss in small groups the potential rare and serious complications of ESI.
- 3)Identify how patient selection and careful technique can minimize rare complication occurrences.

Table 1

Gender	Age	Hx of Back Surgery	Anticoagulants or Antiplatelets	Stopped Prior to ESI	Complication	Timing of Complication (from Injection)
M	86	n	coumadin	Yes	Epidural Hematoma	immediate
M	58	n	n	n/a	R. subacute Cerebellar Hemorrhage	days (5)
M	79	n	Xeralto, ASA	Yes, 3 days prior	Epidural Hematoma	immediate
F	61	n	none	n/a	pneumocephalus	hours
F	74	ACDF C6-C7	ASA	No	epidural hematoma	hours
F	83	ACDF C6-C7	ASA	No	intramedullary hematoma	immediate
F	70	n	coumadin	No	L putaminal ICH	immediate
F	53	n	n	n/a	Intramedullary hemorrhage	immediate

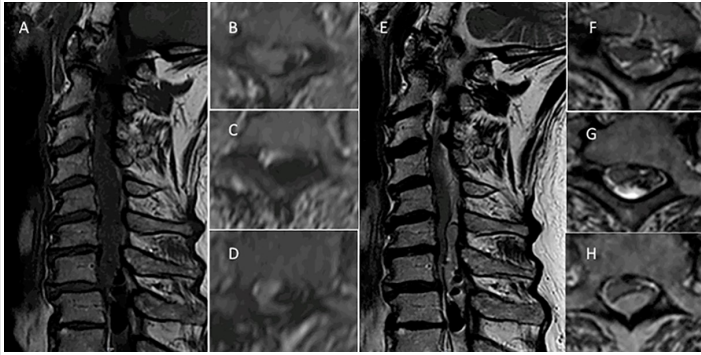
Eight Rare Complications Following Cervical ESI

Table 2

Gender	Age	Hx of Back Surgery	Anticoagulants or Antiplatelets	Stopped Prior to ESI	Complication	Timing of Complication (from Injection)
F	73	n	lovenox	No	Epidural Hematoma	hours
F	73	n	coumadin	No	Epidural Hematoma	immediate
M	69	n	n	n/a	bacterial Meningitis	days
F	36	L5-S1 Lami	n	n/a	paraspinal muscle infection	months
M	37	n	n	n/a	Cauda Equina Syndrome	Days (2-3)
F	49	n	none	n/a	epidural abscess	Days (2-3)
M	52	n	none	n/a	epidural abscess	weeks (1-2)
M	82	lumbar decompression	ASA	No	epidural hematoma	days (2-3)
M	50	L4-5 lumbar laminectomy	none	n/a	Paraspinal hematoma	day (1)
F	44	n	none	n/a	Hydrocephalus from Colloid Cyst	days (4)

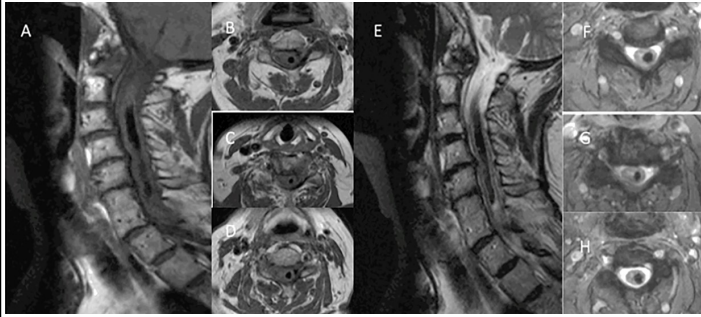
Ten Rare Complications Following Lumbar ESI

Figure 1



83 year-old female with history of coronary artery disease on aspirin, chronic axial neck pain and recurrent left upper-extremity radiculopathy following a C6-7 ACDF underwent a cervical ESI and immediately developed bilateral lower extremity plegia. MR-imaging revealed an acute epidural hematoma following cervical ESI. T1-weighted sagittal and thin axial cuts (A-D). Sagittal and Axial T2 weighted imaging (E-H).

Figure 2



86 year-old female with history of atrial fibrillation on Coumadin with complaints of chronic neck pain for 5 years underwent a cervical ESI and suffered acute onset quadriparesis. MR-imaging revealed an acute intramedullary hematoma following cervical ESI. T1-weighted sagittal and thin axial cuts (A-D). Sagittal and Axial T2 weighted imaging (E-H).

Conclusions

Major neurosurgical complications of epidural injections are distinctly rare but can be quite serious. A majority of these are hemorrhagic and associated with a history of therapeutic anticoagulation; non-hemorrhagic complications tend to be infectious or associated with altered CSF dynamics from inadvertent dural penetration. Prompt treatment of compressive epidural hematoma and abscess can be associated with good outcome.

References

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