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Case Report

Unnecessary Cervical Epidural Injection in An Octogenarian

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ABSTRACT

Background: Epidural spine injections (ESI) have no documented long-term efficacy. Furthermore, cervical ESI uniquely risk intramedullary injections with resultant neurological deficits (e.g. monoplegia to quadriplegia), and intravascular vertebral injections (e.g. which potentially contribute to stroke, brain stem infarction).

Case Description: A patient in his mid-eighties presented with 1 year's duration of neck pain without any accompanying numbness, tingling or weakness in the upper or lower extremities. He had no radiculopathy, myelopathy, or neurological deficit. Two years earlier, the patient sustained a myocardial infarction (MI), requiring over 5 stents and a defibrillator. At the time of presentation, he was still on a baby ASA (81 mg/day), on anti-hypertensives, and cholesterol-lowering medications. His non-contrast cervical CT scan (patient had a pacemaker/defibrillator and could not have an MR) from the summer of 2018 showed no significant spinal cord or nerve root compression at any level. Nevertheless, he was subjected to two cervical epidural injections in the early fall; his baby ASA was stopped 5 days prior to each of these injections. Notably, this placed him at increased risk of MI and/or stroke. When he was seen by neurosurgery, without any neurological deficit or significant cervical radiographic findings, he was referred back to neurology for continued conservative management.

Conclusions: Patients are increasingly subjected to epidural cervical spinal injections that have no documented long-term efficacy, and expose them to significant risks/complications. This 80+ year-old patient, without a neurological deficit or significant cervical CT-documented pathology, underwent 2 cervical ESI that unnecessarily exposed him to potential cardiac-stent related thrombosis (e.g. stopping ASA for 5 days-a bona-fide requirement for ESI to avoid acute epidural hematomas).

Keywords: Five cardiac stents, Defibrillator, Octogenarian, Unnecessary, Cervical, Epidural injections

INTRODUCTION

We are increasingly seeing patients after they have undergone multiple cervical or lumbar epidural spinal injections (ESI). Notably, many of these patients have no surgical pathology, making these injections unnecessary. Additionally, these injections carry significant risks and complications which are further exacerbated by taking patients with significant medical/cardiovascular comorbidities off life-saving anti-platelet aggregates or anticoagulants.

CASE PRESENTATION

Clinical History and Cervical CT Findings

A patient in his mid-eighties presented with the chief complaint of neck pain over the last year. Notably, two years ago he had a myocardial infarction requiring over 5 stents, and a defibrillator. When we saw the patient, he was still on a baby ASA 81 mg/day plus anti-hypertensives, and cholesterol-lowering medications. The patient over the summer of 2018 had a non-contrast CT scan (e.g. with a pacemaker he could not have an MR) that documented no significant spinal cord or nerve root compression. Nevertheless, in the early fall, he was subjected to two unnecessary cervical epidural steroid injections; for each injection he was taken off the baby ASA for 5 days (e.g. as appropriate per the interventionalist guidelines). Fortunately, although abruptly stopping anti-plataelet aggregates can lead to a hypercoagulation syndrome/prothrombotic state, the patient sustained no ESI-related complications.

Neurosurgical Evaluation

Six months later, the patient sought neurosurgical consultation. At the evaluation, it was clear the patient had neck pain/upper back pain only; he had no complaint of numbness, tingling or weakness in the upper or lower extremities. Furthermore, the neurological exam was fully intact. The prior non-contrast CT was reviewed, and indeed, there was no significant spinal cord or nerve root compression at any level. The patient was referred back to his neurologist for continued conservative management, and was advised to take the medications that his neurologist had previously prescribed (e.g. Neurontin/Gagapentin), along with muscle relaxants.

When to Stop Anti-Platelet Therapy for Epidural Injections

It is recommended that anti-platelet Aspirin therapy be stopped > 7-10 days prior to spine surgery, or at least 5 days prior to radiological interventional procedures (e.g. ESI).[6-10] Of interest, however, Gerstein *et al*. (2012) observed that stopping ASA could precipitate an "acute Aspirin withdrawal syndrome" characterized by platelet rebound, and a prothrombotic, hypercoagulable state that can increase the risk of cardiovascular complications.[6] In this 80+ year-old patient, the risk of stopping Aspirin for 5 days meant that each day another 10% of his platelets were regaining normal function (i.e. assuming as per hematology that platelets regenerate over 10 days which might not be as true in an 80+ year old vs. younger patient), and could therefore, have contributed to occlusion of any of his > 5 stents.

Unnecessary Lumbar Epidural Injection Delays Surgery

In 2015, Epstein documented that a patient's critical lumbar surgery was unduly delayed by multiple lumbar epidural injections.[3] The patent had a massive L2-L3 lumbar disk herniation with stenosis and cauda equina compression at the time of his initial presentation to pain management. Despite the already extant cauda equina syndrome, he was subjected over the next 3 months to LESI. Finally, by the 4th month, he presented with a frank cauda equina syndrome to neurosurgery, and underwent an emergent L1-L3 laminectomy with central-left sided L2-L3 disc excision; postoperatively, the patient was fortunate to recover normal function.

However, this 2015 case illustrated how pain specialists (e.g., radiologists, anesthesiologists, and physiatrists), not specifically trained to perform neurological examinations or recognize neurosurgical urgencies/emergencies, are increasingly performing unnecessary ESI, and delaying critically necessary surgery. Further, this 80+ year old patient with no cervical surgical lesion, was unnecessarily taken off baby ASA for 5 days, thus exposing him to the life-threating risk of cardiac stent thrombosis.

Epidural Spinal Injections Risk Dural Injury and Other Major Complications

Approximately 9 million ESI are performed in the US/year. The multiple complications of cervical and lumbar epidural injections included various types of inadvertent dural injuries: dural punctures during epidurals performed for labor, epidural spinal injections (ESI including epidural transforaminal ESI (TESI)), placement of intradural pain devices, and spontaneous cerebrospinal fluid (CSF) fistulas.[4] In 8 studies, additional neurological complications of inadvertent dural punctures included; spinal headaches/intracranial hypotension, subdural hematomas, and 6th nerve cranial palsies (double vision). Further, in 5 of 6 studies, CESI additionally resulted in intramedullary or intravascular spinal cord injuries (see below).

Risks of Cervical Epidural Injections

In 2018, Epstein discussed the major risks/complications attributed to cervical epidural injections that have never been approved by the Food and Drug Administration (FDA), and have no documented long-term efficacy.[5] These complications included; epidural hematomas, infection (abscess/meningitis), neurological deficits attributed to intramedullary (quadriparesis/quadriplegia), and intravascular injections (e.g., vertebral artery injections, and cord, brain stem, and cerebellar strokes due to methylprednisolone particulate matter). Notably, this 80+ year-old patent had no cervical symptoms, signs, or radiographic pathology, and therefore, did not warrant a cervical epidural steroid injection with these attendant risk factors.

Risks of Stopping Aspirin Therapy with a History of Cardiac Stents

There is a risk of delayed cardiac drug eluting stent (DES) thrombosis when stopping anti-platelet therapy to perform epidural spine injections (ESI). For example, Al-Dehneh *et al*. (2010) presented a 69-year-old male who required surgery for a traumatic subdural hematoma.[1] He had to stop his Aspirin and

Clopidogrel that he had been using since 4 DES were placed 4 years ago. Notably, 33 days postoperatively, or 1,659 days following the original DES stent placement, the patient developed delayed stent thrombosis.

Others like Bell *et al.* (2011) evaluated how antiplatelet therapy should be managed in patients who have previously undergone DES procedures.[2] Those with DES typically initially received dual antiplatelet therapy for up to 1 postoperative year to avoid the significant risk of stent thrombosis (e.g. death and myocardial infarction). Nevertheless, very late (>365 days) stent thrombosis remains a concern, and the question as to when it is it safe to stop such therapy (e.g. Aspirin: either full dose 325 mg, or baby ASA 81 mg) remains unanswered.

Certainly, a patient like the 80+-year-old presented here, with > 5 stents and a defibrillator, should not have been taken off Aspirin to undergo 2 CESI, both of which would not qualify as life-saving or even necessary procedures.

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Conflicts of interest

There are no conflicts of interest.

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