Subacute traumatic spinal epidural hematoma: case report

Eka J. Wahjoepramono

Faculty of Medicine University of Pelita Harapan
Department of Neurosurgery Siloam Gleneagles Hospital Lippo Karawaci

ABSTRACT

Spinal Epidural Hematoma (SEDH) is a very rare case, and may occur as a result of trauma, but may also develop spontaneously in patients with bleeding disease. The incidence of spontaneous SEDH was 0.1 per 100,000 people annually. Traumatic SEDH is extremely rare. Patients with spontaneous SEDH typically present with acute onset of severe back pain and rapidly develop signs of compression of the spinal cord or cauda equina. SEDH occurring spontaneously or after minimal trauma has been attributed most often to a venous source. Early diagnosis and a prompt surgical intervention are usually with excellent outcome especially in cases with progressive neurological findings. Magnetic resonance imaging (MRI) is the technique of choice for diagnosis of SEDH. We report a case of a traumatic SEDH in a 4 years old boy with distinct neurologic deficits and completely recovered after emergency laminectomy evacuation was performed.

Keywords : Spinal epidural hematoma, laminectomy, hematoma evacuation

Subakut traumatik spinal epidural hematoma : laporan kasus

ABSTRAK

Spinal Epidural Hematoma (SEDH) adalah kasus yang jarang terjadi, kasus yang ditemukan biasanya terjadi karena trauma, tetapi dapat juga terjadi secara spontan pada pasien dengan kelainan perdarahan. Kejadian SEDH yang spontan adalah 0.1 per 100.000 orang per tahun. Penderita dengan SEDH yang secara spontan mengalami nyeri pinggang yang terjadi secara mendadak dan disusul gejala-gejala kompresi dari tulang belakang atau kauda ekuina. SEDH dapat terjadi secara spontan atau setelah mengalami trauma yang minimal. Perdarahan spinal epidural traumatic sangat jarang terjadi. Diagnosis awal dan operasi yang tepat akan memberikan hasil yang memuaskan terutama pada kasus dengan kelainan neurologik yang progresif. Magnetic resonance imaging (MRI) adalah metode diagnosis pilihan untuk SEDH. Kami melaporkan kasus SEDH pada anak laki-laki umur 4 tahun dengan gangguan penurunan neurologik dan sembuh total setelah menjalani laminektomi.

Kata kunci : Perdarahan spinal epidural, laminektomi, hematomia eavakuasi
INTRODUCTION

Spinal Epidural Hematoma (SEDH) is a very rare case and usually due to spontaneous cause in patient with risk factor.\(^{(1,2)}\) According to Holtas, et al.\(^{(3)}\) incidence of spontaneous SEDH was 0.1/100,000/year. Patients with spontaneous SEDH typically present with acute onset of severe back pain and rapidly develop signs of compression of the spinal cord or cauda equina. SEDH occurring spontaneously or after minimal trauma has been attributed most often to a venous source. In general, etiology of SEDH may occur as a result of trauma, but may also develop spontaneously in patients associated with anticoagulation, thrombosis, blood dyscrasias, coagulopathies, thrombocytopenia, neoplasms, vascular malformations, lumbar puncture or regional spinal anaesthesia.\(^{(2,4-6)}\) The epidural venous plexus usually is involved, though arterial sources of hemorrhage also occur. The dorsal aspect of the thoracic or lumbar region is involved most commonly, with expansion limited to a few vertebral levels.

Magnetics resonance imaging (MRI) is the technique of choice for diagnosis of SEDH.\(^{(5)}\) Emergency decompressive laminectomy usually performed as the treatment although there are some reports of spontaneous resolution.\(^{(1,2,4)}\) Outcome of the patient depended on the neurologic condition before treatment and time interval from the onset and treatment.\(^{(2)}\)

CASE DESCRIPTION

A 4-year-old boy came to SG hospital with chief complaint of weakness on his upper and lower extremity. Ten days previously he fell in prone position and pressed down by three of his friend with total weight about 75 kg. Immediately he complained of pain on his back, weakness on his upper extremity and also difficulties in walking. Then he underwent a traditional massage (chiropractic), but his complaint was unchanged. There was no history of any spontaneous bruises or hematoma and outstanding disease. On general examination he was normal, but neurological examination revealed tetraparesis, strength on the upper extremity was 4, while the strength on his lower extremity was 3. The sensory function was inaccessible due to lack of patient’s cooperation. His vegetative function was normal.

Figure 1. SEDH compressed the spinal cord
Laboratory findings including bleeding time and clotting time were normal. MRI examination demonstrated a hypertense lesion on T1 weighted image (T1W1) and T2 weighted image (T2W1) with a surface band of reduced signal on T2WI (Figure 1). This lesion was epidural and extending from C4 to Th3 on the posterior and left side with maximum diameter of 13 mm on level Th1. There was also an extended lesion on the anterior side of C7 to Th3 with a maximum diameter of 6 mm on Th2-3 which compressed the dural sac and spinal cord.

We diagnosed the patient as having a subacute epidural hematoma on the cervico-thoracal region. The patient was taken to operative room, a C3 to Th3 laminectomy and removal of hematoma were performed. During the operation we found a clotting hematoma about 30 cc compressing the dural sac and the source of bleeding was not identified. After the surgery, the motor strength recovered to normal within 6 days post-surgery.

DISCUSSION

This case is our first case of SEDH and as stated before, this entity is very rare. A review of this entity was made by Groen et al,(7) that studied 330 patient with spontaneous SEDH of published study. Another study by Lawton et al,(4) studied 30 patients with spontaneous and traumatic cases of SEDH. While post-traumatic cases had been studied by Foo and Rossier,(8) that reported 6 cases and 38 cases from published studies. The incidence of SEDH after manipulation on the cervical spine similar to our cases has been reported by Segal et al.(9)

Epidural hematoma in spinal cord is believed to be of venous origin.(2) Epidural venous plexus in spine was due to lack of valves which permit reversal of flow in the system and allows sudden increases in pressure during activities or normal daily living, moreover during sudden increase of blood pressure.

Meanwhile, Beatty and Winston found that the hematoma came from arterial origin.(2) In our case, we could not find the source of bleeding, so we suspect that the hematoma came from venous origin. Most patient complained sudden back pain with radicular component than developing signs of myelopathy. Hematoma usually is located in the posterior side, but Florence et al,(10) and Kessel et al(11) reported a case of SEDH located in the anterior side.

MRI is the diagnosis of choice to diagnose SEDH, the advantage of MRI examination is the ability to do a complete investigation of the spinal cord in all planes. Axial section assess the degree of spinal cord compression and sagittal section can visualize the extent of the hematoma. MRI also can categorize the hematoma by giving different signal on acute, subacute or chronic hematoma. Acute blood clot will show high signal of intensity both on T1 and T2 weighted image. Further, later hemosiderin staining will show a surface band of reduced signal on T2 weighted image.(5,11,12)

In this patient, MRI finding was consistent with the finding of other authors. T1 and T2 weighted image showed a hypertense lesion, with a reduced signal on T2 weighted image on the surface of the hematoma. Hematoma may occur at any level of the spine, the most common level was on the thoracal.(1)

In general, rapid diagnosis and emergency surgical treatment will maximize neurological recovery, even in patient with complete neurologic lesions or long-standing compression.(4) Some authors have reported spontaneous resolution of the hematoma,(13,14) but in condition with distinct or worsening neurologic deficit operative treatment is the choice. In patient that could not undergo operation, conservative treatment is the choice, but there is also some methods of evacuation namely needle aspiration(1) and endoscopic surgery.(10) Wagner et al,(13) suggest a conservative treatment if patient is stable or improving neurological condition on admission, but he also suggested monitoring with MRI examination. Foo and Rossier pointed that the recovery was dependent on the severity of neurologic deficits before treatment, but they also mentioned that the absence of motor or sensorimotor function preoperatively does not necessarily indicate a poor prognosis.(15)

Study by Groen and van Alphen correlated neurologic state and time interval between onset and operation, and found that patients outcome was...
dependent on neurologic condition before operation and interval between onset and operation. They concluded that favorable outcome could be achieved in patients with complete sensory motor deficits if operated ≤ 36 hours and for patient with incomplete sensory motor deficits if operated ≤ 48 hours.(7) Another factor that affected outcome was the presence of spinal fracture, Foo and Rossier found that patients without spinal fracture had better prognosis may be due to less contusion in the spinal cord, also due to the presence of very young patients in this group of patients.(8)

In our case, although the patient came 10 days after the onset but with an unchanged neurologic deficits from the onset. This condition motivated us to perform emergency decompressive laminectomy. Rohde et al.(16) studied correlation between etiology of SEDH and neurologic outcome, he found that traumatic SEDH had better prognosis for two reasons: first the trauma patient usually was under medical surveillance and can undergo operation more rapidly and secondly the traumatic case usually had smaller size of hematom.

CONCLUSION

SEDH is a rare case that usually caused by rupture of vein plexus in epidural space. Prognosis is very good as long as hematoma could be removed soon before it caused permanent neurologic deficit.

References