Posttraumatic syringomyelia

General information

Posttraumatic syringomyelia (PTSx) may follow significant spinal trauma (with or without clinical spinal cord injury). Includes penetrating injury or non-penetrating “violent” trauma to the spinal cord (injuries such as post-spinal anesthesia or following thoracic disc herniation are not included).

Epidemiology

Often a late presentation following spinal cord injury, and therefore incidence is higher in series with longer follow-up. Incidence is increasing as a result of longer survival following spinal cord injury and improved detection with the proliferation of MRI scans. Range: ≈ 0.3–3% of cord injured patients

In a large number of patients followed via multicenter cooperative data bank, there were fewer cases of syrinx following cervical spine injury than following thoracic injuries [1] (may be artifactual since patients with lower lesions may be more aware of ascending levels).

Latency following spinal cord injury:

1. latency to symptoms: 3 mos to 34 yrs (mean 9 yrs) (earlier in complete cord lesions than incomplete: mean 7.5 vs. 9.9 yrs.

2. latency to diagnosis: up to 12 yrs (mean 2.8 yrs) after the onset of new symptoms

Clinical

The late appearance of upper extremity symptoms in a paraplegic patient should raise a high index of suspicion of posttraumatic syringomyelia [2]

Hyperhidrosis may be the only feature of descending syringomyelia in patients with complete cord lesions [3]

Evaluation

One end of the cavity is often found at a site of spinal fracture or abnormal angulation.

Management

General information

Many authors advocate early surgical drainage of cysts as a means of reducing the increased delayed deficit [4]. Some authors feel that aside from disturbing sensory symptoms, the motor loss was infrequent and therefore conservative management is indicated in most cases [5].

Medical

Managed non-surgically: 31% remained stable, 68% progressed over yrs (longer F/U in latter).

Surgical

There is probably no benefit in operating on a patient with a small syrinx [6]

Surgical options

Same as in communicating syringomyelia, with the following differences:

1. cord transection (cordectomy) [7] : an option in complete injuries only

2. plugging the obex is probably not indicated (controversial in congenital syrinx).

Outcome

In 9 PTSx patients treated with syringosubarachnoid shunt [8]: pain relieved in all 9 (1 only slightly), motor recovery in 5/8, improved tendon reflex in 1/10. Some post-op complications in 9 patients included: 1 incomplete lesion became complete, 1 sensorimotor deterioration, transient pain in 3. Most results are good for radicular symptoms, with dubious efficacy for autonomic symptoms or spasticity.

Syrinx shunting, and in particular syringosubarachnoid shunting (SSAS), provides neurological improvement or stabilization in at least 50% of these patients. Given the debilitated condition of many of these patients, a minimally invasive approach to the insertion of these devices is desirable.

Case reports

2019

A patient with a complex L3 burst fracture from a remote trauma s/p stabilization. Thirty-two years later, he developed progressive neck pain, upper extremity radiculopathy, dysesthesias, and clinical

myelopathy (dropping objects, gait imbalance). An MRI demonstrated an expansile syrinx from C2-conus medullaris which previously had been unsuccessfully treated by fenestration. We offered a T1-2 laminectomy and placement of synringosubarachnoid shunt. In the associated video (Supplemental Digital Content 1, http://links.lww.com/CLINSPINE/A107), we demonstrate the step-by-step approach for this procedure, including microsurgical intradural intramedullary exploration and insertion of a T-tube shunt catheter. We additionally demonstrate nuances of ultrasonography that guide medullary entry localization and confirmation of successful shunt placement. Finally, we review preoperative planning pearls pertinent to revision surgeries, pitfalls of the operation, and postoperative management strategies germane to successful outcomes [9].

2017

A 40-year-old man with complete paraplegia since 1991 as consequence of a Th4 vertebral fracture showed a great posttraumatic syringomyelia that extended up to C2 vertebral level, without signs of recent worsening. 150 x 106 autologous MSCs were injected into the syrinx, without drainage or aspiration.

One year after cell therapy, syrinx was reduced without collapse of cervical spinal cord. In the course of follow-up, clear clinical improvement was observed, mainly in sphincter dysfunction.

Injection of MSCs in the syrinx of posttraumatic syringomyelia is safe and is associated with clinical and neuroimaging improvement. The possibility of cell therapy as a new approach to posttraumatic syringomyelia, or even for idiopathic syringomyelia, is an open door that requires further studies [10]

2007

O'Toole et al. provide the first report of an SSAS inserted in a minimally invasive fashion through a tubular retractor [11].

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