

A. MECHANICAL:

- Spinal surgery (especially multiple)
- Multiple lumbar punctures
- Trauma
- Spinal stenosis
- Chronic disc prolapse

B. CHEMICAL:

- Myelographic dyes: oil-based (Iopendylate: Myodil/Pantopaque and water-based (various)
- Epidural steroid injections (e.g. Depo-Medrone)
- Epidural anaesthesia
- Other intraspinal drugs such as amphotericin B and methotrexate

C. MISCELLANEOUS:

- Infection e.g. meningitis
- Subarachnoid haemorrhage

Causes

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In my Global survey, in 1999, I found that there were the following rates of risk factors:

1. Trauma: 8%
2. Stenosis: 18%
3. Spinal surgery : 75%
4. Dural tear/puncture/CSF leak: 3%
5. Spinal tumour: 1%
6. Lumbar puncture: 2%
7. Oil-based myelogram: 59% (40% oil-based only, 19% more than 1 myelogram dye)
8. Water-based myelogram: 29% (3% water-based only, others more than 1 dye)
9. Unspecified myelogram: 20%
10. Spinal/epidural anaesthetic: 18%
11. Epidural steroid injection: 61%
12. Chymopapain: 1%
13. Meningitis (including chemical): 7.5%
14. Subarachnoid Haemorrhage: 2 cases

NOTE: In the majority of cases, there were a number of risk factors rather than a single one. Many participants in the survey had complex histories.

There were only 7 out of 316 cases in which no chemical injection was involved, and 69 cases in which there was no history of spinal surgery.

There were a number of associated conditions:

Causes

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1. syringomyelia: 6 cases
2. arachnoid cyst: 1
3. ACM1 (Arnold-Chiari Malformation Type1): 1
4. Pars defect: 1
5. Spina bifida occulta: 12
6. Tethered cord: 3
7. Spinal abscess: 2
8. Post-operative infection (spinal): 2
9. Tarlov cysts: 2

Other possible associated factors included:

1. Intraspinal narcotic (pump): 8 cases
2. Spinal cord stimulator: 7
3. Rhizolysis: 2

MECHANICAL CAUSES:

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Post-traumatic arachnoiditis cases:

Causes

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Ramli et al ([i]) described a case of Brown-Sequard syndrome which causes pain and sensory disturbance on one side of the body.

The USA National Institute of Neurological Disorders and Stroke (NINDS) describes Brown-Sequard syndrome (BSS) as

"a rare neurological condition characterized by a lesion in the spinal cord which results in weakness or paralysis (hemiparaplegia) on one side of the body and a loss of sensation (hemianesthesia) on the opposite side."

BSS may be also caused by a spinal cord tumour, trauma (e.g. puncture wound to the back/neck), ischaemia (restricted blood supply), infection (often viral) or inflammatory diseases such as tuberculosis, or multiple sclerosis.

Usanov et al., at the Polenov Research Neurological Institute ([ii]) described a case of post-traumatic cystic adhesive arachnoiditis of the thoracic region which presented a few months after the traumatic incident with weakness of the legs and episodes of periodic urinary incontinence, reduced sensation of the lower trunk and legs.

MRI showed narrowing of the spinal cord at T8 with widening of the subarachnoid space at and around this level due to

"a marked adhesive process";

there was also an arachnoid cyst at T9-10 and subarachnoid block at T7.

[i] Ramli N, Merican AM, Lim A, Kumar G *Eur Radiol* 2001; 11(10):2011-4 Post-traumatic arachnoiditis: an unusual cause of Brown-Sequard syndrome.

[ii] Usanov EI, Treier DV, Zuev IV, http://www.neuro.neva.ru/English/Issues/Articles_1_2002/spb/d06.htm

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