

The National Organisation for Rare Disorders (NORD) divides the condition thus:

### Disorder Subdivisions

- Adhesive Arachnoiditis
- Arachnoiditis Ossificans
- Neoplastic Arachnoiditis
- Optochiasmatic Arachnoiditis
  
- Postmyelographic Arachnoiditis
- Rhinosinusogenic Cerebral Arachnoiditis
- Spinal Ossifying Arachnoiditis

Under the International Classification of Diseases (ICD-9-CM) the following classification is used for arachnoiditis:

- 320 bacterial meningitis
- 321 meningitis due to other organisms
- 322 meningitis of unspecified cause

Arachnoiditis may be present in anyone who has had spinal injury, surgery or introduction of foreign substances, but in its most common form, arachnoid adhesions, tiny areas of scar material, it causes no clinically significant problems in the majority of patients.

The second type is local arachnoiditis, which generally results from some local insult to the subarachnoid space, such as injury or surgery.

This involves a larger, but still localised area of adhesions, which, again, may not cause symptoms.

However, this may constitute an undetected 'time bomb' which lurks for years and then precipitates symptoms suddenly apparently out of the blue after a seemingly innocuous event such as a fall or minor car accident.

The exact reason for the sudden sustained exacerbation of symptoms and sometimes decline is not known, although it may be due to bleeding into the CSF, with subsequent inflammation and proliferation of scar tissue, to the extent that nerve roots become sufficiently compromised to precipitate overt clinical symptoms and signs.

The most severe type, which is more likely to cause symptoms, is adhesive arachnoiditis.

This can be mild, moderate or severe, and either focal (localised) or diffuse. The latter type tends to result from insults involving introduction of foreign substances into the subarachnoid space.

It may rarely be progressive. In adhesive arachnoiditis arising due to injections into the spinal fluid, (chemically-induced adhesive arachnoiditis), the more widespread damage may also be associated with systemic symptoms.

Spinal adhesive arachnoiditis may be

localised: at one vertebral level

segmental: in two or more levels within a spinal region e.g. lumbar

contiguous: in two or more adjacent vertebral levels

diffuse: if spread over more than one spinal region e.g. lumbar and thoracic

In the 1999 Global survey, I found the following levels of lesions:

1. Lumbar: 87%
2. Thoracic: 23%
3. Cervical: 34%
4. Cranial: 14% of which brainstem 1 case

Widespread (more than 1 level): 91 cases of which 23 had cranial involvement;

45% of respondents who had undergone an oil-based myelogram had widespread arachnoiditis; compared with 21% of those who had had a water-based myelogram, 27% of those who had unspecified dye, and 8% of those who had had an epidural injection of some kind.

### Pachymeningitis

Aldrete ( [i] ) contends that pachymeningitis is &quot;probably one of the most severe advanced anatomopathological phases&quot; of arachnoiditis, being characterised by proliferation of scar tissue to the extent of encasing the spinal cord and nerve roots.

Pachymeningitis affects the dural layer of the meninges.

Wilson ( [ii] ) suggested that the subdural space reacts to the insult of an irritant by producing a well-organised, laminar (layered) fibrosis that resembles a healing subdural haematoma.

This level of severity confers serious clinical consequences such as hemiparesis, dysphasia, blurred vision etc.

Arachnoiditis in the cauda equina can cause a chronic cauda equina syndrome.

This involves pain and sensory disturbance and weakness in the lower limbs, with saddle anaesthesia and bladder, bowel and sexual dysfunction.

A rat study ( [iii] ) demonstrated the deleterious effects that cauda equina adhesions have upon supply of nutrients to the nerve roots: in complete cauda equina adhesion, the glucose transport to the cauda equina from the cerebrospinal fluid was reduced by 72% compared with the normal cauda equina.

The authors concluded:

"Considering the greater nutritional importance of the cerebrospinal fluid in the cauda equina, it is most likely that the impairment of nutritional supply to adhered cauda equina may lead to eventual neural degeneration."

If the spinal cord is affected, there may be areas of ischaemic damage, myelomalacia (softening of the tissue) and formation of cysts.

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[i] Aldrete JA Arachnoiditis: The Silent Epidemic, 2000 JGH Editores.

[ii] Wilson SAK Pachymeningitis spinalis hypertrophica In AN Bruce (ed.) Neurology Vol. 1; Baltimore, Wilkins & Wilkins, 1940 pp.9-11

[iii] Miaki K, Matsui H, Nakano M, Tsuji H. *Eur Spine J* 1999;8(4):310-6 Nutritional supply to the cauda equina in lumbar adhesive arachnoiditis in rats.