

**Osteoporosis:**

Osteoporosis is a common condition, which involves loss of mineralised bone mass in the skeleton, with resulting bone fragility and higher fracture risk. In the UK, osteoporosis affects 1 in 3 women and 1 in 12 men.

Figures suggest that there is a fracture due to osteoporosis every 3 minutes, the hip being the commonest site.

Risk factors for osteoporosis include: post-menopause, low body weight to height, increased liability to falls, chronic disease affecting hormone levels, immobility, thyroid disease, suboptimal diet, cigarettes, caffeine and alcohol.

Medication, especially steroids, is another important factor. Antacids, which may be taken by arachnoiditis patients on NSAID medication to alleviate side effects (heartburn etc.), are also implicated as they interfere with calcium metabolism.

**Blood clots:**

The deep veins in the lower leg are responsible for returning the blood to the heart; this function relies heavily upon the muscles in the calf to assist the movement against gravity. Obviously, when there is relative or complete immobility, this impairs the circulation considerably and allows pooling of the blood in the lower legs, thereby raising the risk of clotting.

Generally, this is not a serious problem unless a piece of clot breaks off (becomes an

embolism) and travels to the lungs, where it can be potentially fatal (pulmonary embolism).

In arachnoiditis, total paralysis is uncommon. It is therefore vital to maintain whatever mobility is possible in order to prevent thrombosis.

**Low potassium:**

There are a number of possible causes:

- Low potassium can occur for many reasons. Use of certain medication, diarrhoea and/or vomiting, and chronic laxative use (often as a result of constipation due to medication) are the most common. Decreased intake or malnutrition can also be a factor.

**Effect of medicines**

- Water pills (diuretics)
- Medicines used for asthma or emphysema (beta-adrenergic agonist type of drugs such as bronchodilators, steroids, or theophylline)
- Aminoglycosides (a type of antibiotic used for treating certain serious infections)
- Insulin

Kidney losses can occur in conditions such as renal tubular acidosis, or in magnesium deficiency or leukaemia.

Low levels of this electrolyte cause the following symptoms, which are often mild and non-specific, and may be multiple involving different parts of the body.

- Weakness, tiredness, or cramping in arm or leg muscles, sometimes severe enough to cause inability to move arms or legs due to weakness (like a paralysis)
- Tingling/ numbness
- Nausea/ vomiting
- Abdominal cramping, bloating
- Constipation
- Palpitations
- Passing large amounts of urine or feeling very thirsty most of the time
- Fainting due to low blood pressure
- Abnormal psychological behaviour (depression, psychosis, delirium), confusion or seeing or hearing things (hallucinations)

### **Chest pain mimicking angina**

A number of arachnoiditis patients have experienced this symptom but investigation has excluded cardiac causes.

There are a number of possible reasons for this problem:

1. referred pain from thoracic spine abnormality
2. arachnoid cysts at the thoracic level have been noted to cause cardiac type symptoms (see above)
3. musculoskeletal pain (e.g. intercostal muscle tenderness)
4. upper gastrointestinal tract problems can cause non-cardiogenic chest pain which appears similar to angina. (see below)

If in doubt, consult a doctor immediately. Serious causes such as myocardial infarction or pulmonary embolism may need to be excluded.

**Dyspnoea** (shortness of breath): may be associated with chest pain.

There may be a number of different reasons for this symptom, although arachnoiditis is only likely to be direct factor if it involves the thoracic region.

Other causes include weight gain, loss of cardiopulmonary fitness due to immobility, incomplete ventilation (due to pain on breathing in, postural abnormalities, immobility etc.) and side effects of medication (respiratory depression from opiates, for example).

Allergies associated with the condition may involve a respiratory reaction with bronchospasm, causing wheeze and shortness of breath (c.f. asthma).

Shortness of breath may also be associated with difficulty in swallowing and heartburn (see below).

### **Dysphagia:**

Dysphagia (difficulty swallowing) may affect some patients (27% in the global survey), especially those who have cervical pathology.

In particular, this may occur if there is arachnoiditis accompanied by degenerative changes such as anterior osteophytes (bony outgrowths).

However, it may also be experienced by those with only lumbar pathology, though the reasons are unclear.

Pharyngeal symptoms may include feeling as if a lump is stuck in the throat, and this may be

dismissed by some clinicians as 'globus hystericus', a psychosomatic complaint.

Difficulty swallowing causes a feeling that food or fluids 'get stuck' on the way down to the stomach. Swallowing is a precisely co-ordinated physiological process, which requires a series of sequential events to occur.

The commonest reason for dysphagia is 'reflux oesophagitis', in which the acidic contents of the stomach regurgitate back up into the gullet causing burning at the lower end (and sometimes 'water brash', a bitter taste in the mouth on bending over).

Heartburn, as most people know it, is of course a well-known symptom. However, there may also be angina-type chest pain and shortness of breath (similar to asthma). Indeed, any adult who suddenly develops asthma-type symptoms should be investigated for reflux.

**Reflux** may be associated with a 'hiatus hernia', a defect in the diaphragm muscle, which leads to reflux on bending over or lying down flat (often in bed at night).

Left untreated, the acid reflux causes inflammation of the oesophagus which can lead to scarring and narrowing and hence, difficulty in swallowing. Note that NSAID (anti-inflammatory medication) use can exacerbate this type of problem.

Other similar causes include a pouch (diverticulum) in the oesophagus, in which food can become trapped.

In neurological conditions such as MS, there may be a neurological cause for dysphagia. There are 3 basic problems which can cause trouble in swallowing in the upper region:

1. Inco-ordination of the muscles of the mouth and throat, so passage of food backwards to the throat is inefficient.
2. Weakness of these muscles, making passage of food slow and difficult.

### 3. Loss of sensation

These may lead to choking or coughing when swallowing is attempted, or food may feel as if it is going down the windpipe.

Dry mouth secondary to medication may compound the problem.

Difficulty in swallowing liquids is usually due to poor muscle control before the swallow and may be associated with neurological conditions.

Difficulty swallowing solid food is usually due to abnormality in the structure or function of the muscles of the mouth or throat or damage to the lining of the gullet (as above).

#### **Common symptoms include:**

- Difficulty chewing and/or moving food to the back of the mouth
- Needing to spit out lumps of food
- Reluctance to eat/drink
- If talking with food in the mouth, forgetting to swallow causing spluttering
- Coughing/choking on food/drink
- Dribbling
- Feeling as if food/tablets are not going down or getting stuck in the throat
- Pain or pressure in the chest
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Vocal changes may also occur: with a hoarse, 'wet' or 'gurgly' voice after swallowing, which may be due to vocal cord paralysis or to acid reflux.

Additional symptoms include weight loss, chronic chestiness or repeated chest infections.

NOTE: vomiting or regurgitation of blood or 'coffee grounds' requires urgent medical attention.

### **Recurrent sinusitis:**

Again, this seems to be quite a common problem in arachnoiditis patients. One of the possible explanations is that the chronic stress of the illness leads to immune suppression and therefore susceptibility to infections.

Airborne infections are the most widespread and thus the most likely.

**Sleep apnoea:** the prevalence of this has yet to be established. It should, however, be noted that this is one of the symptoms of Chiari malformation or cervical cord compression, which does not explain why it is seen in patients with only lumbar arachnoiditis. It may well be the result of abnormal nerve supply to the muscles of the larynx or pharynx.

### **Recurrent dental problems.**

Dental problems are a common problem in arachnoiditis sufferers.

Mostly, people report dry mouth, soreness in the mouth, rapid dental decay and problems with dental local anaesthetics.

Many patients undergo repeated root canal procedures but continue to suffer from facial pain and odontalgia (tooth pain) without attributable dental pathology. There is an increase in tooth decay, which may be linked with medication that causes dry mouth that in turn reduces the protective power of saliva. Pain also causes some people to grind their teeth (bruxism).

Many medications used to combat chronic pain cause dry mouth as a side-effect. A dry mouth (xerostomia) is a common side effect with drugs such as antidepressants (e.g. amitriptyline), clonidine, propranolol, antihistamine, and drugs to treat bladder incontinence.

Rather than being considered a mild nuisance, this common occurrence should be recognised as a significant factor in inducing dental problems.

It is important to realise that saliva is an essential fluid in maintaining dental health. It acts as a protective agent against decay: it washes away sugars and it neutralises acid (which demineralises teeth). It also contains the minerals calcium and phosphate.

Other conditions which are associated with dry mouth include Sjogren's syndrome, an autoimmune condition (note that there may well be an autoimmune component to arachnoiditis and there are a number of people with both conditions diagnosed). Generally, in Sjogren's there will also be dry eyes. (the test for this condition is Schirmer's test).

Other circumstances in which dry mouth can occur include chronic sinus problems (not uncommon in arachnoiditis: the reason being as yet unclear) because sufferers tend to breathe through their mouths instead of their nose.

Other condition affecting the patency of the nasal passages (e.g. deviated septum, adenoids) can lead to mouth breathing, especially at night. Radiotherapy in the neck region may destroy salivary glands.

Once someone experiences a dry mouth, they may fall into a cycle of actions which precipitates tooth decay. Often they will increase their fluid intake, perhaps using thirst quenching cool drinks, which are often full of sugar.



Carbonated (fizzy) drinks not only contain sugar, even the sugar-free ones may have a damaging effect. Fruit juices (even pure) are doubly bad as they have sugar and acid. Taking frequent sips of these drinks compounds the problem.

Of course, it is also tempting to suck sweets to wet the mouth.

Note that opiate medication (morphine and related drugs) may cause cravings for sweets.

Dry mouth may also lead on to burning sensation. A burning tongue may be associated with smoking, menopause, candidal infection etc. Glossitis (pain and redness in the tongue) if acute may be associated with gingivitis (gum swelling) or a generalised stomatitis (inflamed mouth).

Chronic glossitis may occur in chronic ill health (non-specific) anaemia and tooth infections, as well as conditions such as gastritis and during the use of some antibiotic drugs.

The autoimmune condition pernicious anaemia is another cause arising due to vitamin B12 deficiency.

### **Burning Mouth Syndrome:**

This uncommon condition (BMS) affects mostly postmenopausal women aged 50 or over.

The mechanism by which BMS occurs is yet to be understood.

However, there have been links noted between BMS and hormonal disturbances, salivary flow rates, medication side effects, immunological disorders, vascular and neurological disorders. Neuralgia and sensory disturbances may be involved. In a few cases, deficiency of vitamin B12 or folate may be found.

Food allergy may be a precipitating factor. Smoking habits or alcohol consumption, although potentially factors, are rarely acknowledged as such.

However, for idiopathic BMS, no causative factor can be identified.

Triggers for arachnoiditis symptoms.

The New Zealand survey looked at trigger events for symptoms:

Activity: 90% were aggravated (cf. Long 94% had back pain exacerbated by activity)

Position: prolonged sitting/standing etc.; crouching/bending. (~40% for each)

Therapies: physiotherapy, osteopathy, chiropractic, hydrotherapy, TENS were listed by 2 subjects only.

Weather and ambient temperature: 23% were affected.

Specific factors: including stress, intercurrent illness etc.

Unknown: 6 subjects were unable to identify trigger events.

Side effects of medication (see in detail below)

These occur to some extent in most arachnoiditis patients, largely because of the potent drugs involved, often used in combination. Opiates alone can cause a wide variety of side effects, but when taken in combination with adjuncts such as antidepressants; anticonvulsants or muscle relaxants; there may be a cumulative effect.

The most common side effects are dry mouth, constipation, drowsiness, nausea, dizziness, urinary retention and blurred vision. Some drugs, such as opiates, NSAIDS and certain antidepressants may cause fluid retention, and thus weight gain.