

LUPUS

Bone Health & Osteoporosis



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This factsheet gives information about bone health and osteoporosis in lupus – there is a separate factsheet on LUPUS the Joints and Muscles. Although osteoporosis is often seen as affecting mainly older females, it is about five times more common in lupus than normal, and frequently affects younger people and patients of both sexes. There is however a lot that can be done to both prevent and treat the condition.



What is Osteoporosis?

Osteoporosis is increased fragility of bones, which leads to an increased risk of fracture. Broken bones are not just painful but have an impact on life and even survival. Repeated studies show that in the general population about 20% of patients with a hip fracture die within 12 months, and that less than 50% are independently mobile again outside the house. Other common fracture sites include the wrist, the shoulder, the ankle and the vertebrae of the spine. Vertebral fractures can often go undetected, which is a major issue, as they predict who is likely to have a more serious fracture in the future, and who might therefore benefit from investigation and treatment.

Many factors contribute to the strength of bones, but these are generally grouped into either bone density (related to how calcified the bone tissue is) and bone architecture (related to how good the structure of the bone is, related in turn to the rate of turnover of the bone). An easy comparison is with building a wall, where the bone density represents how strong the bricks are, and the architecture how well they are put together. Bone density increases from birth up to about the age of 25-30, after which it should remain constant until around 50, when a slow decline begins. Women tend to have accelerated bone loss after the menopause. Architecture is difficult to measure at the clinic (although bone turnover can be measured fairly easily in research) but bone density is routinely assessed using a DEXA scanner, and has been shown to be an excellent guide to who is likely to fracture, and therefore who might benefit from treatment.

A bone density (DEXA) scan is reported as a 'T score' at the hip and lumbar spine, and sometimes the forearm as well. This is frequently a negative number, because all bone

density is set against a 'gold standard'; the average density in a healthy young adult. Only when the T score falls below -1.0 does the risk of fracture start to increase. Scores between -1.0 and -2.5 are known as 'osteopenia' - low bone density with a modestly increased risk of a break. When the score falls below -2.5 however, the risk of a fracture increases dramatically, and is referred to as osteoporosis. A DEXA is a quick and painless examination (you do not have to go into a tunnel), and should be considered in most lupus patients after the menopause, in lupus patients (male or female) who have received courses of corticosteroids, who have a strong family history of fracture or who have other risk factors for osteoporosis (see below).

Why do lupus patients get Osteoporosis?

There is some evidence that simply having lupus (or indeed any systemic inflammatory condition) might automatically increase the risk of reduced bone density a little, probably by increasing the rate of bone turnover. The two main reasons however are the necessary treatments for SLE, and the lifestyle changes associated with the disease.

Steroid Treatment

Although life-saving for some lupus patients, and symptom-controlling for many more, regular corticosteroid use is linked to a range of serious side-effects. Many of these are obvious (weight gain, sleep disturbance) or easily detectable (raised blood sugar, raised blood pressure). Osteoporosis is one of the most dangerous symptoms however, because it causes no symptoms and is often not detected until after the first fracture.

Steroid causes low bone density by several mechanisms, including interfering with absorption of calcium from the gut and kidney, and increasing bone turnover. Steroids appear to both extend the life of osteoclasts (which absorb and remove bone) and shorten the life of osteoblasts (which create new bone tissue). Almost all lupus patients have been prescribed steroids at some point in their illness.

Lifestyle

There is a long list of other factors which contribute to osteoporosis. Low vitamin D levels play a role, and yet lupus patients are advised to avoid sunlight, the chief natural source of the vitamin. Aside from actively avoiding ultraviolet light, the strength of sunlight in the northern parts of the UK, including Scotland and Northern Ireland, is too low for much of

the year to produce useful levels of vitamin D.

Other relevant risk factors include low weight, smoking, long term use of PPI drugs (proton pump inhibitors, such as omeprazole, lansoprazole, pantoprazole), little weight bearing exercise, early menopause and perhaps avoidance of HRT. In combination with steroid use, inherent risk from the condition itself and a possible family history unrelated to lupus, many lupus patients can be at considerable risk of osteoporosis and fractures.



Management

Some simple steps can help reduce the risk of developing osteoporosis. Many patients have poor calcium intake in their diet over the years, and patients at risk of osteoporosis should aim for at least 1200mg per day. As a guide, a pint of semi-skimmed milk has about 600mg. Vitamin D supplementation makes sense for anyone living in the UK - there is even evidence that regular Cod Liver Oil use might reduce activity of lupus itself. 800iu per day is usually required to maintain levels, although some people require more if they are deficient to start with. More advice/information about diet can be found in 'Lupus and Healthy Eating' available from LUPUS UK. A check of vitamin D levels is often useful. Stopping smoking, weight bearing exercise and good disease control also help.



Medications

Once osteoporosis has been diagnosed, a range of treatments is available

Calcium and vitamin D supplements

The mainstay of osteoporosis treatment. There is evidence that even without stronger drugs, taking regular calcium and vitamin D in combination can reduce the risk of a fracture.

Bisphosphonates

Drugs like alendronic acid, risedronate and ibandronate, taken once a week or once a month, can dramatically slow down bone loss and have been shown, if taken correctly, to substantially reduce the risk of a break. These drugs are however notorious for poor compliance (people not taking them properly, or at all). Most studies suggest that less than 50% of patients are still taking the drug one year after its first prescription. There is a range of reasons for this, including the relatively common side effects of nausea, heartburn and bloating, and the fact that osteoporosis itself does not cause any symptoms unless a fracture occurs -

many patients simply forget. They can also be something of a nuisance to take, as the tablet has to be taken first thing in the morning with tap water on an empty stomach. There have also been concerns about very rare side effects, such as osteonecrosis of the jaw.

In general however, these drugs are very effective if taken properly for a limited amount of time, and can be particularly important as a preventative measure if you need to take long term steroid treatment. One form of the drug (zoledronic acid) can now be given as a once per year infusion.

Denosumab (Prolia)

This is a relatively new drug, and is a monoclonal antibody (like rituximab for example) rather than a chemical (like bisphosphonates). It is given by subcutaneous injection once every six months. It inhibits the specialist cells that absorb and remove bone (osteoclasts) and as a consequence prevents further bone loss and reduces the risk of fracture. Unlike bisphosphonates, denosumab does not accumulate in the bones or cause problems with the stomach or oesophagus, but like any preparation it is not without potential side effects, and is still reserved for more severe cases of osteoporosis, or for people who cannot take bisphosphonates

Teriparatide (Forsteo)

A synthetic form of parathyroid hormone, this drug is a powerful stimulant of osteoblast function and strongly promotes bone growth. It must be given by daily injection, and is reserved for the most severe cases of osteoporosis. Initial concerns about increasing the risk of a rare form of bone cancer in rats have not been borne out in humans.

Summary

Osteoporosis is very common in SLE, both due to the drugs used to treat the condition, and to some of the ways lupus affects the body and the patient's lifestyle. Awareness is key, as the condition causes no symptoms until a fracture occurs, and DEXA scanning is a quick and easy way to assess risk. Adequate calcium and vitamin D intake is essential, and a range of drug treatments are available. If you are concerned about the risk of osteoporosis, you should discuss it with your rheumatologist, nurse specialist or GP. Further information may also be obtained from the National Osteoporosis Society website **www.nos.org.uk**

The LUPUS UK Range of Factsheets

A range of factsheets is available as follows:

1. LUPUS Incidence within the Community
2. LUPUS A Guide for Patients
3. LUPUS The Symptoms and Diagnosis
4. LUPUS The Joints and Muscles
5. LUPUS The Skin and Hair
6. LUPUS Fatigue and your Lifestyle
7. LUPUS and Pregnancy
8. LUPUS and Blood Disorders
9. LUPUS and Medication
10. LUPUS and the Kidneys
11. LUPUS and Associated Conditions
12. LUPUS and the Brain
13. LUPUS The Heart and Lungs
14. LUPUS The Mouth, Nose and Eyes
15. LUPUS and Light Sensitivity
16. LUPUS and the Feet
17. LUPUS and Men
18. LUPUS and Mixed Connective Tissue Disease
19. LUPUS Bone Health and Osteoporosis

LUPUS UK is the registered national charity caring for people with lupus and has over 5,000 members who are supported by the Regional Groups.

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Please contact our National Office should you require further information about the sources used in the production of this factsheet or for further information about lupus. LUPUS UK will be pleased to provide a booklist and details of membership.

LUPUS UK is certified under the requirements of the Information Standard.



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