Infosheet

Osteonecrosis of the jaw (ONJ)

What is ONJ?

Osteonecrosis (pronounced os-tee-oh-neh-kro-sis) of the jaw (ONJ) is a rare condition, the cause of which is not entirely clear. The word 'osteonecrosis' derives from 'osteo', which means bone, and 'necrosis', which means cell death. The condition appears to be related to long-term treatment with certain types of drugs known as bisphosphonates, particularly the intravenous (IV) type. ONJ has occurred in some forms of cancer such as myeloma, breast and prostate cancer. ONJ is not a new condition and a similar condition is sometimes seen as a side-effect after radiotherapy to the jaw.

ONJ has only become apparent as a problem in people with myeloma in the past 3 to 4 years. It is not yet known how often ONJ occurs in myeloma, but, from available reports, the incidence in patients on IV bisphosphonates is between 1% and 12%.

About bisphosphonates

Bisphosphonates are drugs used to strengthen and protect the bones, and are used in various conditions including myeloma. Bone damage is a common and often painful, debilitating, complication of myeloma. Studies have shown that regular treatment with bisphosphonates can help to reduce fractures, relieve pain and improve quality of life.

Bisphosphonates currently prescribed in the UK for myeloma are:

- Zoledronic acid (Zometa) – into the vein (IV) as a drip, every month
- Pamidronate (Aredia) – into the vein (IV) as a drip, every month
- Sodium clodronate (Bonefos or Loron) – by mouth as tablets (orally), every day

Intravenous (IV) bisphosphonates, rather than oral bisphosphonates, are recommended to treat the high levels of calcium in the blood (hypercalcaemia) caused by myeloma bone disease. So you may initially have an IV bisphosphonate to treat hypercalcaemia. Once the calcium level is corrected, you and your doctor can decide whether to continue on IV bisphosphonates or to switch to an oral alternative for regular treatment.

The type and duration of bisphosphonate treatment you have is based on doctor / patient preference, and is dependent on your own situation.

Things to consider in the decision-making process include:

- the level of bone disease you have
- how active your myeloma is
- any previous bisphosphonate treatment you have had

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- other complications you may have, such as kidney impairment
- personal preference

Current UK guidelines on myeloma recommend that all patients requiring treatment for their myeloma stay on bisphosphonates indefinitely.

Why are bisphosphonates linked to ONJ?

The exact reasons why ONJ is linked to long-term use of some bisphosphonates are not fully understood. We know that bisphosphonates work by binding to calcium and reducing the activity of the cells that cause bone breakdown in myeloma (osteoclasts).

It has been suggested that ONJ occurs because bisphosphonate drugs disrupt normal bone remodelling, and affect the healing process after any trauma. Bisphosphonates may also increase the risk of ONJ by reducing the blood supply to the bone; without a good blood supply, bone cells will die.

The bones of the jaw seem to be particularly prone to osteonecrosis. In the mouth the bone is only covered by a small layer of tissue, so it can become more easily exposed, particularly at the site of invasive dental procedures.

Risk factors for ONJ

The risk of ONJ occurring in myeloma seems to be closely associated with the:

- type of bisphosphonate used – ONJ is more likely to occur with the use of IV bisphosphonates. Zoledronic acid appears to carry the highest risk.
- duration of treatment – the risk of ONJ occurring increases with the length of time on treatment. ONJ appears to be very uncommon in the first two years of bisphosphonate treatment.

ONJ is more likely to happen after trauma or infections in the mouth. Most ONJ cases arise after invasive dental treatments or oral surgery. This includes treatments such as dental extractions, implant placement and periodontal surgery, but not routine dental work such as fillings.

ONJ is also more common in older people, those with a history of gum disease, mouth infections, and in those who wear dentures.

Other factors that may contribute to the risk of ONJ include steroid therapy, diabetes, alcohol and smoking, poor oral hygiene and chemotherapy treatment. Further research, however, is needed for more certainty.

What are the symptoms of ONJ?

Symptoms of ONJ include:

- non-healing of a tooth socket after extraction
- an area of exposed bone in the mouth
- swelling of gums
- a heavy or numb feeling in the jaw
- pain
- loosening of teeth
- discharge of pus

Early symptoms can sometimes go unnoticed. It may be an infection in the affected area that causes the more noticeable symptoms of pain, swelling and discharge.

It is important to note that having these symptoms does not necessarily mean you have ONJ. These symptoms can be due to other, more common conditions. You should contact your doctor or dentist for advice if you experience any of the symptoms above.

How is ONJ treated and managed?

There are currently no specific UK guidelines on the management of ONJ in myeloma, but various guidance documents on ONJ have been produced in the USA and also by MHRA (the medicines regulation agency in the UK). All these documents agree that prevention is the best approach to management of this complication.

Prevention of ONJ

The following points are important in preventing or reducing the risk of ONJ occurring:

- Your doctor should tell you about ONJ before starting you on regular bisphosphonate treatment.
- If possible you should have a routine dental examination and X-ray, and any necessary invasive dental work carried out, before starting on treatment with bisphosphonates.
- You should be informed about how you, as a patient, can help to reduce the risk of ONJ occurring
- Once on bisphosphonates, you should maintain good mouth hygiene and have regular dental check-ups.
- Invasive dental procedures should be avoided if possible when on bisphosphonates. If invasive treatment is absolutely necessary, this should be done in collaboration with an experienced oral and maxillofacial surgeon. Some doctors may recommend you stop bisphosphonate treatment before dental treatment and re-start once healing is complete.

Treatment of ONJ

If you do develop ONJ, your doctor will prescribe treatment to help relieve symptoms, such as treatment with antibiotics and painkillers. Aggressive surgery is usually avoided, as this has not been reliably shown to help. An oral surgeon may, however, need to remove some of the dead tissue or bone from the area with a small operation (debridement).

Putting ONJ into perspective

The proven effectiveness of bisphosphonates in treating and preventing bone disease has to be balanced against the relatively small risk of ONJ occurring. Your doctor should discuss this with you.

ONJ has increased the debate among myeloma doctors on how long patients should stay on their bisphosphonate treatment. There are various American bisphosphonate guidelines now published, and some recommend that doctors consider stopping bisphosphonates after two years. The types and ways in which bisphosphonates are used in America do not necessarily reflect UK practice. Specific UK guidance is awaited.

What to do if you are concerned about developing ONJ

Again, it is essential to remember how important bisphosphonates are in the management of bone disease, and to bear in mind that ONJ is a rare side-effect. As always, if you have any concerns about your treatment or any side-effects, you should discuss them with your healthcare team. You should never stop any of your treatments without first seeking advice from your doctor.

Self care tips

Below are some things you can do to help reduce the risk of ONJ occurring:

- Maintain good mouth care – brush your teeth regularly and use any mouthwashes prescribed
- Make sure dentures fit properly and don't rub
- Visit your dentist regularly for check ups
- Make sure your dentist knows you are on a bisphosphonate treatment
- Tell your doctor about any dental work you may need
- Look out for any symptoms in your mouth such as pain, numbness or sore areas. If you are on IV or oral bisphosphonates you should report any such symptoms to your doctor.

The future

ONJ is a potentially unpleasant but relatively rare complication of bisphosphonate treatment in myeloma. It was first noticed in myeloma patients in 2003, so the exact risks and impact of this complication are still being studied.

It is important to keep in mind how valuable bisphosphonate treatment is in the management of myeloma bone disease. Doctors will always continue to research how best to use treatments to get the maximum benefit from them, with the least possible risk attached. The more doctors understand about ONJ, the better able they will be to minimise the risk, or to prevent it happening.

Further information

The following information may be useful to read alongside this Infosheet:

- Myeloma Infoguide on Bone Disease and Bisphosphonates
- Myeloma Infosheet on Mouthcare

About this Infosheet

The information in this Infosheet is not meant to replace the advice of your medical team. They are the people to ask if you have questions about your individual situation. Publications from Myeloma UK are extensively reviewed by patients and healthcare professionals before print. This Infosheet has been reviewed by Dr John Ashcroft, Consultant Haematologist, Pinderfields Hospital, Wakefield; Professor Simon Rogers, Consultant Maxillofacial Surgeon, University Hospital, Aintree; Shirley Crofts, Myeloma Clinical Nurse Specialist, Royal South Hants Hospital and Stewart McRobert, patient reviewer.

Other information available from Myeloma UK

Myeloma UK has a range of Essential Guides, Infoguides and Infosheets available, covering many areas of myeloma, its treatment and management. To order your free copies, contact the **Myeloma Infoline** on **0800 980 3332**. This information is also available on our website at www.myeloma.org.uk If you would like to talk to someone about any aspect of myeloma, its treatment and management, call the **Myeloma Infoline** on **0800 980 3332**. Your call will be answered by Myeloma Nurse Specialists who are supported by medical and scientific advisors. The Myeloma Infoline is open from Monday to Friday, 9am to 5pm, and is free to phone from anywhere in the UK. From outside the UK, call +44 131 557 3332 (charged at normal rate).

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