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ASIA EDITION

"Females are at higher risk of suffering from osteoporosis"

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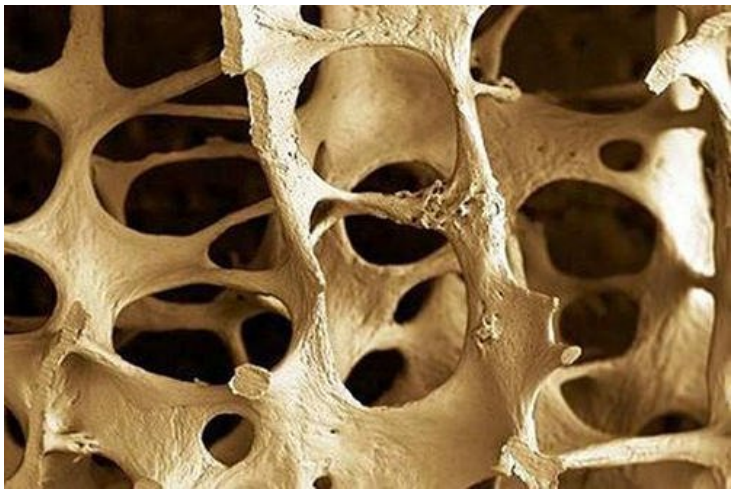
The age- and sex- adjusted hip fracture rates have exploded in Asia due to urbanization, and the much-improved survival rates in Asians. By 2050, Asia will account for 50% of the world's hip fractures.



Osteoporosis is a condition where poor bone mass is coupled with poor bone quality, resulting in poor bone strength and an increased risk of fracture. Singapore has the highest hip fracture rates in Asia. This year, Osteoporosis Society (Singapore), Asian Federation of Osteoporosis Societies, International Osteoporosis Foundation and Amgen have come together to spearhead *'Fight the Fracture'*, a regional public education campaign to highlight the seriousness of fragility fractures, their link with osteoporosis and empower patients to proactively prevent fractures. On this occasion, *Priyanka Bajpai* of BioSpectrum Asia spoke to **Dr Chionh Siok Bee,** President of Osteoporosis Society, Singapore and Senior Consultant, Division of Endocrinology, National University Hospital on this deadly condition and its management.

Q. Can you please elaborate on some of the leading causes of osteoporosis, fractures and bone-related medical conditions?

A. There are two major causes of osteoporosis – female gender, especially after menopause (due to loss of oestrogen), and ageing (being older than 50 years of age).

1. Women and Menopause

Women reach peak bone mass in their 20s to 30s. They start to lose bone mass after about 35 years old, at approximately 0.75-1% per year. The rate of bone loss then accelerates to 2-3% a year, especially at the spine, starting about one year prior to menopause to two years after menopause. The rate subsequently slows down five years after menopause to 1% per year.

As men do not undergo a similar sudden dramatic loss of male hormone levels, they do not experience a comparable acceleration of bone loss. They start to lose bone mass at a later age (about 45 years old) at approximately 0.5% a year.

2. Ageing

Bone loss increases with age, especially above 50 years of age. A sedentary urban lifestyle exacerbates the effects of ageing. The age- and sex- adjusted hip fracture rates (the number of hip fractures per year in each age bracket for males and for females) have exploded in Asia due to urbanization, and the much-improved survival rates in Asians. By 2050, Asia will account for 50% of the world's hip fractures.

3. Lifestyle

Other important lifestyle risk factors include cigarette smoking and excessive alcohol consumption - things you can afford more with rising affluence. Epidemiological studies have shown that fragility fracture rates are directly proportionate to the per capita number of mobile phones and per capita GDP. Prolonged bed rest also exacerbates bone loss.

4. Genetics

Genetic pre-disposition is also important, as a parent or sibling with a fragility hip fracture puts the individual at higher risk of suffering from a hip fracture.

Osteoarthritis is another bone condition which causes pain in the joints during movement, particularly at the knees and spine. This condition is caused by the surfaces of bones "rubbing" against each other, which wears out the cartilage lining around those areas. However, this should not be confused with osteoporosis. Osteoporosis does not cause any symptoms until after a fracture occurs.

Q. **Restricted mobility is probably one of the more common outcomes of osteoporosis and fractures. However, what other ways can these outcomes affect individuals, temporarily or permanently?**

A. Osteoporotic fractures are associated with significant mortality and morbidity. There is pain, reduced mobility, disability, and an increasing degree of dependence. Vertebral fractures can result in serious consequences, including loss of height, intense back pain and deformity. Kyphosis can be so severe that the ribs touch the pelvic bones and there is difficulty eating and breathing. A hip fracture also often requires surgery and may result in the inability to walk and death.

Other outcomes include:

- Greater risk of subsequent fractures. When an individual experiences a fracture, the risk of subsequent fractures increases by 2.5 to 10-fold
- Depression

Q. **What are some of the other ailments that indicate a bigger underlying problem? For example, what can be the potential correlation of pathological fractures resulting from cancer or bone related ailments?**

A. Some of the conditions that cause secondary bone loss and fragility fractures are already quite serious, but there are also pathological fractures associated with malignancies:

- Cancers such as breast or prostate cancer with bone metastases
- Malignancies such as myeloma, lymphoma, leukemia which involve bones
- Surgery, or drugs used to treat the malignancies, which may cause hypogonadism or may contain high dose steroids

Sufferers would generally not feel well and usually experience weight loss, in addition to the symptoms of the underlying cancers. These pathological fractures can be detected on x-rays and scans.

Q. Is there a gender, demographic or age-related trend or profile when it comes to such ailments? Who are more at risk?

A. The risk of fragility fractures increases dramatically with age and hence, is more common in older people and in women after menopause. Men follow five years behind women in their age-adjusted risk of fracture.

Females are at higher risk of suffering from osteoporosis as women tend to have smaller, thinner bones than men. Furthermore, oestrogen – the primary hormone that protects bones, even in men – decreases sharply when women reach menopause, which can cause severe bone loss. For some women, bone loss happens faster than for others. In fact, a woman can lose up to 20% of her bone density during the five to seven years after menopause.

Q. How can people differentiate one-off injuries / fractures resulting purely because of participation in active sports from cases where more fundamental underlying reasons are at play (such as osteoporosis, deficiencies or even some skeletal issues, etc)?

A. Osteoporosis results in fragility fractures or low-trauma fractures, e.g. from a fall that occurs from standing height or less, like a slip or trip and landing on one's bottom. These fractures would not have occurred in a young adult suffering from the same accidental fall.

Fractures from high trauma, such as the examples outlined below, are not considered osteoporotic in nature:

- Road traffic accidents
- Falls from one or two storeys
- Skiing
- American football scrum
- Trauma causing fractures of the skull, neck, ribs, fingers and toes

Q. What is your advice to patients who get a fracture? How can we take better and preventive care of ourselves?

A. One of the best ways to prevent fractures is exercise as it builds both muscle mass and strength, and bone mass and strength. Exercise also helps to keep away metabolic problems such as diabetes which predispose you to osteoporosis, and even helps to keep away many types of cancers. Exercise and a diet rich in calcium and vitamin D can help keep our bones healthy.

These are the preventative steps to lower the risk of fractures:

- Take medications to reduce the risk of further fractures if you have already had a fragility fracture
- Take enough calcium in the diet (1,000 - 1,200 mg elemental calcium a day for those aged 51 years and above)
- Have enough Vitamin D from sunshine and oily fish.
- Take calcium and Vitamin D supplements, if necessary
- Take enough protein to maintain muscle mass and function
- Exercise, which must be tailored to the individual's condition
- Stop smoking and drinking excessively
- Those with underlying secondary causes should have them treated

People age 50 years old and above who do not have fractures should also check to see if they have the risk factors for osteoporosis.

Q. Finally, please do provide an overview of 'Fight the Fracture' campaign, and how it addresses the low knowledge on fractures through education?

A. The Fight the Fracture campaign is under the auspices of the International Osteoporosis Foundation, the Asian Federation of Osteoporosis Societies, and the Osteoporosis Society, Singapore, and is supported by Amgen.

The campaign is aimed at overcoming the lack of knowledge in fragility fracture patients and their doctors. It educates them about osteoporosis as a cause of their fractures and the need to treat the condition aggressively, as opposed to treating it as a natural part of ageing.

The campaign works to empower patients who have suffered a fragility fracture, and their caregivers, to be more proactive in secondary care prevention Ã¢â?¬â?? the prevention of a subsequent fracture Ã¢â?¬â?? by providing them with educational information, tools and resources. They will be encouraged to initiate a conversation with their doctor towards proactive management of their osteoporosis to avoid another fracture, as well as to work towards healthy lifestyle measures.