Bisphosphonates are compounds used in the treatment of many skeletal disorders such as bone metastases, osteoporosis, Paget’s disease, hypercalcaemia of malignancy and bone pain. The main pharmacological effect of Bisphosphonates is the inhibition of bone resorption, mediated by a decreased function of osteoclasts, inhibition of calcification and reduction of inflammatory reaction in the joints. Bisphosphonates are accumulated mostly in the bone matrix and especially under osteoclasts and this is the main reason for the primary effect of Bisphosphonates on bone surface and in osteolytic lesions where the number of osteoclasts is increased. Bisphosphonates is highly resistant to hydrolysis under acid conditions or by pyrophosphatases.

Little is known about the side effects and dangers of the long-term use of therapeutic doses of Bisphosphonates. There have been reports on gastrointestinal complications such as gastric and oesophageal erosions and ulcerations and cases of renal failure and acute tubular necrosis. A new complication of Bisphosphonates therapy administration, i.e. osteonecrosis of jaws also known as Bisphosphonates-associated osteonecrosis (BON) of the jaws, seems to be developing.

Oral Bisphosphonates include alendronate (Fosamax, Merck), risedronate (Actonel, P&G), ibandronate (Boniva, Roche), tiludronate (Skeliv, Sanofi), and etidronate (Didronel, P&G) are commonly used in the treatment of osteoporosis in women in the years immediately following menopause. These are commonly prescribed by physicians to patients and were widely used by post-menopausal women as self-prescribed drugs from drug-stores in Hong Kong. Many physicians, patients and even dentists do not know the dental side effects of these drugs especially after long-term administration. Avascular osteonecrosis of the jaws developed after simple tooth extraction is common (Figure 1, 2 & 3) and in severe cases, invasion of the adjacent vital structures may be the complications (Figure 4 & 5).

The management of osteonecrosis of the jaws includes surgical debridement to obtain a clear and bleeding margin after cessation of the Bisphosphonate therapy for several months (from 2 to 8). Long-term antibiotic therapy including clindamycin, amoxicillin and penicillin G is the treatment of choice after surgery depending on the microbiology culture of the defect. When prescribing these drugs, physicians must warn the patients to alert the dental practitioners whenever dental extraction is required.
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References