



ORIGINAL ARTICLE

Prevalence of jaw osteonecrosis among patients receiving bisphosphonates in Riyadh

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KEYWORDS

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Abstract The objective of this study is to obtain a data on the prevalence of bisphosphonate-associated osteonecrosis of the jaws (ONJ) among patients who received dental treatment in Riyadh.

The study was conducted in five hospitals in Riyadh area. All subjects were interviewed to collect data regarding their medical history, bisphosphonates usage, dental history, and possible complications after dental treatment. A total of 88 subjects under bisphosphonates therapy were interviewed, 25% were males and 75% were females. Bisphosphonates were taken orally by 89.7% of the subjects while 10.2% received bisphosphonate intravenously. All the subjects have had dental treatment after the beginning of bisphosphonate therapy. 79.5% of those patients had dental extraction, 13.6% root canal treatment, 4.5% oral surgery, and 4.5% received dental implants. No complications were reported after dental treatment.

In the present study, patients with bisphosphonates therapy did not develop complication after dental treatment. However, it is recommended that patients receiving bisphosphonate therapy should be treated with precaution. Dental awareness programs should be provided to the physicians prescribing bisphosphonates to their patients.

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1. Introduction

Bisphosphonate therapy is one of the most important anti-resorptive agents used in the treatment of variety of diseases such as: osteoporosis, metabolic bone diseases, metastatic diseases to the bone, hypercalcemia, Paget's disease and multiple myeloma (Estilo et al., 2008; Marx et al., 2005; Seehra et al., 2009; Walter et al., 2007).

Bisphosphonates are group of medicine available in different format such as, alendronate (Fosamax[®]), pamidronate (Aredia[®]), risedronate (Actonel[®]), and zoledronic acid (Zometa[®]).

Bisphosphonates are commonly used in tablet form to treat osteoporosis in post-menopausal women (Grbic et al., 2008; Holder and Kerley, 2008; Wells et al., 2008). Stronger forms

given orally or intravenously (iv) are used in the management of advanced cancer cases when the cancer cells have metastasized to the bone causing pain and possible bone fractures (Smith et al., 2009; Wadhwa et al., 2010; Walter et al., 2009).

Bisphosphonates act at the cell level by targeting osteoclasts and disrupting their function in several ways: They inhibit osteoclast recruitment, reduce osteoclast lifespan, and inhibit bone surface activity of these cells which will lead to reduction in bone resorption (Hokugo et al., 2010; Marx et al., 2005). When bisphosphonate absorbed from the gastrointestinal tract around 50% of the dose binds to bone. The half-life of bisphosphonates in bone is very long, ranging from 1 to 10 years, depending largely on the rate of bone turnover.

An association between bisphosphonates and a serious bone disease called osteonecrosis of the jaw (ONJ) has been reported in several articles (Dimitrakopoulos et al., 2006; Fugazzotto and Lightfoot, 2006; Hong et al., 2010; Kicken et al., 2007; Langer, 2006). ONJ is a condition in which the bone tissue in the jaw fails to heal after minor or major oral surgeries, such as tooth extraction, causing the bone to be exposed. This exposure can eventually lead to a serious infection and may even lead to bone fracture (Arribas-Garcia et al., 2009; Basu and Reid, 2007).

Food and Drug Administration (FDA) in the United States raised a warning to the health care professionals on September 24, 2004 regarding the potential risk of performing dental extraction or other oral surgery in patients receiving bisphosphonate therapy. Most of the reported ONJ were associated with patients when bisphosphonates were given intravenously or for longer periods of time (Vahtsevanos et al., 2009; Lodi et al., 2010; Statz et al., 2007).

In addition, some classes of bisphosphonates have shown higher tendency to develop ONJ (Marx et al., 2005) reported that ONJ cases were associated with pamidronate and zoledronic acid compared to the other format of bisphosphonates.

The aim of the study is to obtain data on the prevalence of bisphosphonate-associated osteonecrosis of the jaws in a selected Saudi population.

2. Materials and methods

The present study was conducted among selected sample of Saudi patients under bisphosphonate therapy attending outpatient and inpatients clinics in five major hospitals in Riyadh. These hospitals include King Khalid University Hospital, Security Forces Hospital, Military Hospital, King Abdulaziz University Hospital and Sultan Bin Abdulaziz Humanitarian City. After taking the consent of the patient, an interview was performed to collect patient information, medical history, bisphosphonates usage, and dental history. During the interview the patients' medical records were checked to obtain the required information.

Ethical approval was obtained from the Ethical Committee of the College of Dentistry Research Center. Data was entered and analyzed using Statistical Package for Social Science (SPSS version 13).

3. Results

A total of 88 patients, 22 males (25%) and 66 females (75%), were interviewed. The age of the subjects ranged between 30 and 80 years with an average age of 58 years.

Table 1 Medical status of the study sample.

Medical condition/risk factor	Percentage (%)
Bone diseases	86
Hypertension	47.7
Diabetes	36.4
Rheumatological diseases	34
Blood diseases	9.1
Cancer	9
Smoking	4.5

Majority of patients have bone diseases, 86%. The other patients' medical conditions are summarized in Table 1.

All subjects were using bisphosphonates for a period ranged from 1 year up to 9 years with a mean duration of 2.6 years. Bisphosphonates were taken orally by 79 patients (89.7%). The medication was taken orally as alendronate with a dose of 70 mg/week. Whereas, 9 patients (10.2%) received bisphosphonate intravenously as pamidronate with a dose of 90 mg over a variable period of time.

All the patients have had dental treatment after the beginning of bisphosphonate therapy. Majority of them visited their dentists within 1–2 years.

During the reported dental visits 79.5% of those patients had dental extraction, 13.6 had Root canal treatment, 4.5% had oral surgery, and 4.5% received dental implants (Fig. 1). No complications after dental treatments were reported by the subjects.

All subjects reported that they were not informed about any possible complication that may arise after dental treatments by dentists or by their treating physicians.

4. Discussion

An association between bisphosphonates and osteonecrosis of the jaw (ONJ) has been reported in several reports. In the present study, none of the subjects who received bisphosphonates therapy developed (ONJ) after dental treatment. The finding

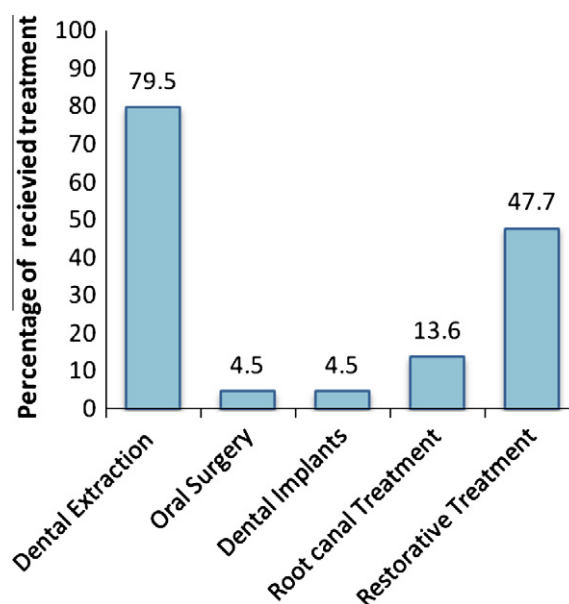


Figure 1 Percentage of the performed dental treatment.

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