Bisphosphonate-Related Osteonecrosis Of The Jaw Triggered By Dental Implants
-The Current Situation In Japan And Correspondence With Osteoporosis Patients When Getting Dental Implants-

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Patients:

<Case 1 of BRONJ>
The case pertains to a 74-year-old woman taking Alendronate for treating osteoporosis. She had three dental implants in both number 19 and 37 at a local dentist during the three years that she had been taking Alendronate. Scaling and pain occurred at the same time of the gum after approximately 5 years and the patient visited our hospital due to aggravating pain and hypesthetic of the lower lip (K). She was diagnosed with BRONJ and marginal resolution of the mandible was carried out under general anesthesia (L, F). Currently, as a long-term follow-up strategy, the prognosis is good, with no local exposure or pain (F, G).

<Case 2 of BRONJ>
The case pertains to a 69-year-old woman taking risedronate for treating bone metastasis from breast cancer. Implants were placed at 35 sites approximately 8 years prior by a local dentist (H); however, the implant was removed due to agitation (I, J). The patient visited our hospital through referral due to subsequent acute pain at the same site as well as hypesthetic of the lower lip (K). Marginal resolution of the mandible was carried out under general anesthesia (I, J). Her implant was repositioned and the prognosis was good (J); however, the patient died due to the primary disease.

Discussion

1. BRONJ With Dental Implants

Study#1 (The Japanese Society of Oral and Maxillofacial Surgeons). According to the investigation in 2014 by the Japanese Society of Oral and Maxillofacial Surgeons, there were 4,729 BRONJ cases within approximately 3 years. Although predominantly more cases lead to osteonecrosis of the jaw due to intravenous BP (IV BP), in reports from overseas countries, half of all osteoporosis cases were undergoing oral BP administration in Japan (fig. 1). It should be noted that, ONJ developed following tooth extraction, while the percentage of cases in which it developed following dental implant placement was about 1% (fig. 2).

Study#2 (J. Jpn. Maxillofac. Surg. 2014. 132:59-62). The incidence of BRONJ in patients with a dental implant placement was 17 cases from July 2013 to March 2015 in Japan. At least 17 cases had a history of oral BP use (92%). Average age of patients was 67.5 yrs. (9.7%); Females 68.5yrs. (9.7%); Location: Mandible: 15 (88.2%); Maxilla 2 (11.8%).

To the treatment method, there were 14 cases in which a surgical procedure was performed. For the cosmetic reasons, 3 cases (21.4%) of excision of affected areas, 3 cases (21.4%) of curettage of tooth extraction, 1 case of turbinectomy, progression, death from the same illness, death from a different illness, and suicide.

Study#3 (Lazarovici, T. et al. J Oral Maxillofac Surg. 2016; 74(1): 70-76). Among 185 BRONJ patients, 108 patients (58%) had implant-related ONJ. Duration of administration until the onset of BRONJ: Alendronate: 20 months, ibandronate: 16 months. There were 3 cases (26.3%) of the onset of BRONJ within six months after the implant placement.

Study#4 (Mita et al. J Oral Maxillofac Surg. 2014; 72(5): 1105). Among 189 BRONJ patients, 10 patients (4.6%) had implant-related ONJ. There was a tendency for those in the injection group to end up with BRONJ.

The patients administered BP before implant placement end up with ONJ earlier than the patients who started BP after the placement.

The longer the duration of BP and medication is, the earlier the onset of ONJ.

2. Points to help the implant treatment of patients receiving Oral BP succeed

2) Cessation of BP

Oral administration be increased in patients as soon as possible to reduce the risk of osteonecrosis. The cessation of BP is not possible to remove the BP as a result of the increased risk of osteonecrosis. The duration of administration until the onset of BRONJ: Alendronate: 20 months, ibandronate: 16 months. Bony exostoses 1%

3) Oral administration be increased in patients as soon as possible to reduce the risk of osteonecrosis. The cessation of BP is not possible to remove the BP as a result of the increased risk of osteonecrosis. The duration of administration until the onset of BRONJ: Alendronate: 20 months, ibandronate: 16 months. Bony exostoses 1%

Conclusion

Implant treatment should be avoided in cancer patients being administered BP; however, implant treatment should be given careful consideration when there is a strong demand from osteoporosis patients being administered BP. Dentists should explain to patients the onset risk of osteonecrosis of the jaw, obtain their consent, and consider the advisability while taking into consideration the administration period of BP and the risk factors of such patients.

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