

## How To Manage Extravasation Of Ibandronic Acid?: A Case Report

Ekstravaze olan ibandronik asit nasıl tedavi edilir?: Vaka takdimi

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### ÖZET

*Ibandronik Asit (İA), osteoporozun önlenmesi ve tedavisinde kullanılan güçlü bir bifosfonattır. Ayrıca hiperkalsemi (yüksek kan kalsiyum seviyeleri) tedavisinde de kullanılabilir. Artralji, femur kırığı, ekstremitede ağrı, ishal, kas ağrısı, mide bulantısı, sırt ağrısı, ağrı ve kemik ağrısı FDA'ya bildirilen en sık yan etkilerdir. Bu olgu sunumu ile İA ekstravazasyonunu ele alacağız. Bifosfonat kullanan bir osteoporotik kadın hastaya intravenöz İA uygulanırken, İV solüsyonun neredeyse tamamı yanlışlıkla ekstravaze olmuş. İki saat sonra iğne giriş bölgesinde, sağ dirsek fleksör tarafta yanma ve orta derecede kaşıntı hissi ve hafif milimetrik eritem gelişen hasta bu durum hakkında kimseye bilgi vermemiş. Sonraki gün eritematöz alan 5-6 cm'ye çıkıp semptomların kötüleşmesi üzerine polikliniğine başvurdu. Ayrıca kusma ve ishal şikâyeti vardı. "Bu hastanın osteoporoz tedavisinin bu durumdan sonra nasıl devam etmesi gerektiği" sorusunu da tartışmak istiyoruz..*

*Anahtar Kelimeler: Ekstravazasyon, ibandronik asit, yönetim, korunma*

### ABSTRACT

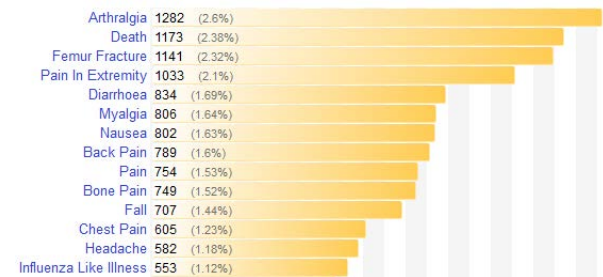
*Ibandronic acid (IA) is a potent bisphosphonate drug used in the prevention and treatment of osteoporosis. It may also be used to treat hypercalcemia (elevated blood calcium levels). Arthralgia, femur fracture, pain in extremity, diarrhea, myalgia, nausea, back pain, pain, and bone pain are most common adverse events of the IA reported to the FDA. We discourse a case of IA extravasation in this presentation. An osteoporotic woman who was using bifosfonate medications had applied intravenous IA, but almost all of the solution was extravasated accidentally. Two hours later she noticed burning and moderate itching sensation and slight millimeter erythema at the flexure of the right elbow in the region of venipuncture but she had decided not to inform. Although the day after the erythematous area had increased to 5-6 cm and the symptoms worsened, she revisited the outcome clinic. Also, she had a complaint of vomiting and diarrhea. Also, we want to discuss the question of "How this patient's osteoporosis treatment should be continued after this situation?"*

*Keywords: Extravasation, ibandronic acid, management, prevention*

### OBJECTIVE

Ibandronic acid (IA) is a potent bisphosphonate drug used in the prevention and treatment of osteoporosis (1). It may also be used for hypercalcemia treatment (elevated blood calcium levels) (2). Arthralgia, femur fracture, pain in extremity, diarrhea, myalgia, nausea, back pain, pain, and bone pain are most common adverse events of the IA reported to the FDA (Figure-1). Extravasation is the much more rare complication of IA. Extravasation is the accidental administration of intravenously (i.v.) infused medications like IA into the extravascular space/tissue around infusion sites, either by leakage (e.g., because of brittle veins in very elderly patients), previous venipuncture (such as from

blood drawn for laboratory tests prior to therapy), or direct leakage from mispositioned venous access devices (3).



**Figure 1.** Most common adverse events of ibandronic acid reported to the Food and Drug Administration

Extravasation of medication during IV therapy is an adverse event related to treatment that, depending on the

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medication, amount of exposure, and location, can potentially cause severe injury and permanent harm, such as tissue necrosis. Although IA causes milder consequences of extravasation to include irritation, characterized by symptoms of pain and inflammation, with the clinical signs of warmth, erythema, or tenderness.

We discourse a case of IA extravasation in this presentation..

#### CASE

A 65-year-old postmenopausal Turkish woman came to outpatient clinic for her annual checkup. She has been in good general health for the past several years. She has undergone menopause in her early 50s and used hormone therapy (HT) with estrogen/progestin for her menopausal symptoms for two years; she has remained on hormone and vitamin D, therapy primarily for prevention of osteoporosis. She has no personal history of fractures, her older sister experienced a hip fracture and currently not on any chronic medications other than HT. She is 154 cm's and weighs 68 kgs. She drinks several cups of coffee per a day, and rarely exercises and does not smoke cigarettes. Her height has remained stable. A physical exam was performed, with no abnormalities noted. Measurement of the patient showed no loss of height over the last several years. Assessment of her caloric, vitamin D, and calcium intake is consistent. A bone mineral density (BMD) test performed on this patient revealed lumbar spine (L1-L4) vertebra T-score of -3.1 and left hip T-score of -2.5. Laboratory results revealed standard serum chemistries and complete blood count. Urinary calcium excretion was slightly elevated. Serum 25-hydroxyvitamin D and thyrotropin and urinary-free cortisol values were all within the normal reference range. Based on these results, no secondary causes for low bone mineral density were identified. So ibandronic acid three mg/3 dl prescribed with calcium and vitamin d supplements. She had applied intravenous IA, but almost all of the solution was extravasated accidentally. Two hours later she noticed moderate itching sensation, burning, and slight millimeter erythema at the flexure of the right elbow in the region of venipuncture but she decided not to inform.

Although the day after the erythematous area had increased to 5-6 cm and the symptoms worsened, so she revisited the outcome clinic (Figure 2). Also, she had a

complaint of vomiting and diarrhea. At that moment she was recommended to apply topical hydrocortisone ointment twice a day and cooling with ice packets. Her lesion was healed in two weeks. We have considered continuing her treatment with oral ibandronic acid instead of IV application. But we could not find a right answer for "How soon after the new medication must be started after this event?".



**Figure 2.** The appearance of the skin one day after extravasation

#### DISCUSSION

Bisphosphonates have a slight risk of renal toxicity especially for intravenous (IV) forms that could be reduced by hydration and extended infusion time (4). Both zoledronate and IA have an excellent renal safety profile in osteoporosis treatment with glomerular filtration rate (GFR) > 30 ml/min (1). Parenteral administration of IA is recommended in patients with definite contraindication or gastrointestinal diseases (5, 6). For the IV injection, the recommended dose of IA is 3mg/3dl once every three months. Common possible side effects of IA are stomach pain (such as "gastritis"), indigestion, nausea, having diarrhea or constipation, headache, feeling tired and exhausted, flu-like symptoms including fever, shaking and shivering, feeling of discomfort. Also, some rare side effects such as swelling of the face, lips, tongue, and throat, with difficulty breathing and itching, persistent eye pain and inflammation, new weakness or discomfort or pain, in thighs, hips or groins are defined. But extravasation is the much more rare complication of IA (5, 6). The IV IA itself is always an irritant; therefore, the injection should be given

into the vein, and strict adherence to the IV route of administration is essential. IV catheter application should be performed by a physician or qualified/trained healthcare worker (5, 6). Extravasation is the accidental administration of IV infused medications like IA into the extravascular space/tissue around infusion sites, either by leakage (e.g., because of brittle veins in very elderly patients), previous venipuncture (such as from blood drawn for laboratory tests prior to therapy), or direct leakage from mispositioned venous access devices. According to U.S. Food and Drug Administration reports a percentage of IA patients is 0.0900%, where injection site extravasation is a detailed side effect (7). Also, 0.03% of Zoledronic acid patients reported having extravasation as a side effect (7, 8). Extravasation is an infrequent side effect of the I.V. bisphosphonates. Following the guidelines are given below for minimizing the risk of extravasations is vital to prevent this undesired situation.

#### Guidelines for minimizing the risk of extravasation (3)

- Do not site cannula over joint spaces, as this can cause irreparable damage to nerves and tendons should extravasation of vesicant occur
- Ask patients to report any change in sensation, stinging or burning. Always listen to the patient
- Never cover cannula site with a bandage
- Dilute irritant drugs as much as possible and give at the appropriate rate
- Whenever possible, administer vesicant drugs as a bolus
- Check for swelling, inflammation, and pain around cannula site during the administration of intravenous drugs
- Particular vigilance is needed in patients who may not experience the pain of extravasation or are unable to localize the pain - babies, who have diabetes with peripheral neuropathy and patients with decreased level of consciousness
- A central line should be used to administer cytotoxic medication.

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