A Silent Chemotherapy Extravasation as the Unexpected Enemy: A Case Report

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A Silent Chemotherapy Extravasation as the Unexpected Enemy: A Case Report

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Abstract

Introduction: Chemotherapeutic agents can cause extravasation which is one of the most devastating complications. Docetaxel is used in the treatment of many solid tumors. Diagnosing its extravasation is usually easy because clinical symptoms appear early but sometimes this process might be a slightly symptomatic acute event or even an indolent one. Case presentation: We report a case of a Caucasian man, aged 81, with metastatic prostate adenocarcinoma and progressive disease. In 2010 he complained of pain on his hip. Serum level of PSA was higher than 3000 ng/ml. He started chemotherapy with Docetaxel and Prednisone. With one of the infusions, he experienced burning sensation, itching and slight erythema in the region of venipuncture. He presented an erythematous area without swelling. He was instructed to use topical betamethasone and gentamicin cream but he came to meet us seven days after because he presented a violaceous and painful area of swelling with appearance of subcutaneous infiltration and an incipient 1 cm blister. He was recommended to apply betamethasone and gentamicin cream again but much higher doses, to cover the lesion to protect it from the sunlight and to take non-steroidal anti-inflammatory drugs to relief pain, experiencing improvement without sequalae. Conclusion: Docetaxel extravasation is a complication that can be very serious which requires early treatment to avoid or reduce sequalae. It is very important to be aware of this potential lesion in any patient receiving chemotherapy even more if the lesion appears after an asymptomatic infusion.

Key messages:
1. Chemotherapy extravasations occur rarely but these might be serious.
2. Docetaxel extravasation tends to be vesicant in contrast with that described in several published articles and usually with severe sequalae.
3. In most cases the diagnosis is easy because it is very symptomatic but there are silent cases with a very difficult diagnosis.
4. Early treatment can help to reduce the damage and subsequent sequalae.
5. This existence of these cases must be known by the professionals in order to start the treatment quickly aiming to reduce the damage and subsequent sequalae.

Introduction

Systemic intravenous chemotherapeutic agents can cause multiple emergency situations but among them drug extravasation is one of the most devastating (1). Although it is not a frequent complication (in fact, it has been reported to occur in 0.1-6.5% of cases) it can cause local serious tissue damage so that professionals must be aware to prevent it (2). Docetaxel is an antineoplastic agent used in the treatment of many solid tumors such as breast, ovarian, lung or prostate carcinoma (3). Although its well-known adverse side-effects include neutropenia, fluid retention, myalgia, neuropathy, hypersensitivity reaction, alopecia, mucositis or nail changes, sometimes it can cause local tissue injury following intravenous infusion extravasation (2). Though it has been largely classified as an irritant agent rather than a vesicant (4), there are some published case reports showing a vesicant reaction after extravasation and guidelines have considered it as a low vesicant potential agent. Diagnosing a docetaxel extravasation is usually easy to make because clinical symptoms appear early but sometimes the process of extravasation can be a slightly symptomatic acute event or even an indolent one (3). This fact should lead us to be more aware about this potential complication and try to know it better to diagnose and treat it quickly to avoid sequalae (5) or even better to avoid it by taking care of the venipunctures and infusions.

We present here the case of a patient who did not show any symptom of extravasation during the infusion but noticed slight itching sensation while the nurse was taking the catheter out. He developed a localized vesicant tissue reaction.

Case Presentation

A 81-years-old Caucasian man diagnosed with stage IV prostate adenocarcinoma with multiple bone metastases and several regional malignant lymph...
nodes who had received endocrine therapy with good response for many years with reduction in levels of serum PSA repeated evaluations. In 2010 he started to complain of low intensity, with walking left hip pain, with occasional difficulty to walk. He met his GP doctor who took him an analysis. The serum level of PSA was higher than 3000 ng/ml with undetectable levels of testosterone. He was also evaluated by a CT scan and radionuclide scintigraphy. Both tools showed multiple metastases (bone and nodes) previously unknown. In view of the progressive disease already considered hormone resistant he started systemic treatment with chemotherapy based on Docetaxel and Prednisone on a weekly basis schedule (six weeks on, followed by two off). He was also informed about the convenience of external beam radiation therapy on his painful hip.

After two doses the patient’s general condition improved significantly and the level of PSA was reduced to less than a half. He tolerated well the infusion. While the nurse was taking out the catheter the patient started experiencing slight itching sensation but he did not complain about that because its autolimited nature. He felt well after less than one minute. He was discharged from the day oncology unit. Two hours later he noticed burning and moderate itching sensation and slight millimeter erythema at the flexure of the right elbow in the region of venipuncture but he decided again not to inform. At that time the patient referred not to have swelling.

The day after the erythematous area had increased to 3-4 cm and the symptoms worsened so he visited the emergency room and was instructed to use topical betamethasone and gentamicin cream three times per day during one week with the suspicious of an infection at the venipuncture point. He applied it only once and stopped the treatment voluntarily. The fourth day after the infusion the patient had erythema with swelling and pain in the flexure of the right elbow measuring 5 x 6 cm. He was examined in the emergency room again and an extravasation was suspected. At that moment was recommended to apply topical hydrocortisone ointment twice a day and cooling with ice packets but two days after the lesion got worse although the pain alleviated with ice.

He came to meet us seven days after the infusion of the last chemotherapy. He presented a violaceous and painful area of swelling measuring 7 x 8 cm with appearance of subcutaneous infiltration and an incipient 1 cm blister (Figure 1). The treatment was changed to betamethasone and gentamicin cream again but much higher doses, to cover the lesion to protect it from the sunlight and to take non-steroidal anti-inflammatory drugs to relief pain. He was advised to visit us once a week. On the day 14th after the extravasation insult he presented a noticeable improvement with a smaller and slightly erythematous area with desquamation partially covered with a new and bright skin (Figure 2) and without pain although he stopped taking anti-inflammatory drugs. On the 21th day after the extravasation the area was just slightly erythematous without symptoms (Figure 3).

Discussion

Extravasation is a leakage or direct infiltration of a chemotherapeutic drug from a vessel to the surrounding tissues. It is difficult to know its exact frequency because the variability of its clinical presentation but it has been published an incidence rate of 0.01 to 6.5% (2).

What professionals have to keep in mind is that every patient who receives chemotherapy is at risk to develop this complication and the best treatment would be the prevention whenever it is possible(1).

There are many chemotherapeutic drugs but all of them could be classify based on their potential to cause local tissue injury. In such a way there are vesicant, irritant or non-vesicant agents (2). Irritants can cause pain at the injection site or along the vein with or without inflammatory reaction and just in cases with large amount of concentrated drug solution extravasated, soft tissue ulcers could appear (2). More important are vesicant agents. The vesicant type injury could induce a wide spectrum of lesions varying from mild erythema, swelling and formation of blisters to cause tissue destruction such as ulceration and necrosis (2). Early appearance of symptoms during the infusion is very important to detect it quickly to stop the treatment, but sometimes, and probably due to the small amount of drug extravasated, its lesion may be delayed for several days or even weeks (3) and even the acute symptoms which are very important to make the diagnosis can lack with the subsequent more seriousness of the damage.

As our case has showed it might be possible to have an indolent extravasation without any relevant acute symptom or just with un especific and transient one. Old patients may have a reduction in their sensibility or may be they are not as aware as young people about the relevance to notify every symptom to the professional once it appears. This must lead us as professionals to ask them about the potential symptoms they can notice aiming to avoid this potential severe complication. Although an extravasation could appear with every
cytotoxic drug, there are several that merit to be better known because the frequency of their use. Paclitaxel is a member of the taxoid family which has been recognized as a clear vesicant drug (2). On the contrary docetaxel which is another member of this family and whose use is increasing to treat a wider spectrum of solid tumours (4-6) has been largely classified as irritant but its vesicant potential (2) can not be forgotten.

Despite the almost indolent beginning of the process in our patient and the wrong initial diagnosis, fortunately he experienced a relatively quick recovery with pain disappearance in less than one week without any functional impairment, probably due to the amount of the drug extravasated had to be very small and luckily the peripheral nerves were not affected. But sometimes a delayed diagnosis is related to a more severity of the lesions.

Although there is no consensus about the best treatment to apply, cooling with ice-packed and topical steroids and antibiotics seem to get good results (7,8). Sometimes it should also be used anti-inflammatory drugs to relief pain but to our knowledge plastic surgery has not been used in any of the published docetaxel extravasations.

Due to this patient will need multiple more infusions it will be necessary a central line to improve safety although the risk will not disappear but it will reduce the rate of inadvertent drug extravasation which is very important in old people who can not feel symptoms in the same way than younger.

This case aims to make physicians and nurses aware about the relevance to inform the patient completely and to pay attention to every symptom or to encourage patients to tell them whenever the symptom appears although they considered it can not be relevant. Much could be done with this simple key point in mind.

Conclusion

Although chemotherapy extravasations occur rarely, these might be serious complications with functional and esthetic sequelae. Docetaxel is one of the agents more frequently used in oncology and its extravasation tends to be vesicant in contrast with that described in several published articles. Therefore its complications and sequelae may be severe. Although in several cases the diagnosis is easy because it is very symptomatic, there are some silent cases with a very difficult diagnosis. One must be aware that these cases exist to start the treatment quickly aiming to reduce the damage and subsequent sequelae. These are the cases which pose a challenge for all the professionals involve in the oncologic care.

Finally, much remain to be done to know the best treatment and via to apply this treatment for all these patients.

References

Illustrations

Illustration 1

Figure 1: Extravasation on the 7th day after the acute episode.

Illustration 2

Figure 2: Extravasation on the 14th day after the episode.
Illustration 3

Figure 3: Erythematous area on the 21th day after the acute extravasation.
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