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A COOL SOLUTION FOR DOCETAXEL INDUCED ONYCHOLYSIS:

A case report of a cold water bath to prevent Docetaxel-Induced Onycholysis

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Introduction

Docetaxel belongs to the taxane group of chemotherapy agents. Taxanes work by disrupting the microtubule network essential for mitosis and interphase cellular function. It is one of the most important classes of chemotherapeutic drugs effective against a variety of solid tumours including breast cancer and metastatic prostate cancer.

One of the commonest side effect that affects as high as 44%¹ of patients on taxane is nail changes which may include discolouration, brittle nail, acute paronychia and onycholysis. The physiopathology of nail toxicity is unknown. Several studies have suggested this could be due to antiangiogenic properties of taxanes² while others proposed the existence of a neurogenically mediated inflammatory process³.

Cold treatment of the scalp is a recognized treatment for chemotherapy-induced alopecia by causing a cold-induced vasoconstriction, thus reducing the amount of drug reaching the hair follicles as well as a decrease in follicular metabolism⁴. Using the same concept, we report a case of using cold water to cool the fingers to reduce Docetaxel related nail toxicity.

Case Report

Mrs S is a 64 years old lady with breast cancer undergoing Docetaxel administration as part of her chemotherapy treatment. Her right hand and both feet were immersed in a bowl of cold

tap water immediately prior to the start of her Docetaxel infusion, during her 90 minutes infusion and then for 30 minutes afterward. The water was kept cold by the addition frozen gel packs which were replaced when necessary, in order to keep the fingers comfortably cool.

She did this for each of the four cycles of Docetaxel administered at a dose of $75\text{mg}/\text{m}^2$.

Mrs S complained of marked discomfort in the right hand but not the left hand or her feet following cycle two and for six weeks after her fourth cycle. Furthermore, she developed onycholysis in her right finger nails but not the nails of the left hand. A photo was taken 4 weeks after the end of the fourth cycle of Docetaxel administration which clearly showed onycholysis in the right hand but not left.



Figure 1: A photo of Mrs S immersing her left hand and feet in cold tap water during Docetaxel administration.



Figure 2: Nail changes and onycholysis (most obvious in the right ring finger) were seen in the right hand but less on the left (which was immersed in cold water).

Discussion

The nails of this patient were protected by immersion in ice cooled water during the administration of Docetaxel. The limitations of using this method are the potential hazards of having bowls of cold water in the chemotherapy suite and the risk of frost bite particularly if there is associated peripheral neuropathy.

This concept of fingers cooling has recently been investigated in a small phase two study in France where frozen glove was used for the prevention of nail and skin toxicity associated with Docetaxel treatment. The results of the study showed reduced Docetaxel related nail and skin toxicity⁵. The cold water method that we used in this case report is straight forward, cheap, simple to use and allows easy access and monitoring of the fingers by nursing staff during chemotherapy administration.

In summary, large numbers of patients are at risk of Docetaxel related nail toxicity every year. Whilst the effects may be trivial in some, they can also cause pain and functional impairment which could cause dose reduction or delay in chemotherapy administration. This case report suggests that immersing hands and feet in cold water is a practical way to reduce the incidence of Docetaxel induced nail toxicity. Future randomised analysis could focus on the feasibility of introducing this cooling method into routine practice, particular the magnitude of benefit, optimal duration and temperature of cooling required.

References

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Conflict of Interest Statement

No Conflict of Interest.

