



As macroscopic observation may overlook symptoms during infusion, we focused on skin temperature changes at puncture sites and studied thermographic patterns related to induration or necrosis caused by extravasation” Oya et al (2017).

Abstract:

PURPOSE: Extravasation, or leakage of vesicant drugs into subcutaneous tissues, causes serious complications such as induration and necrosis in chemotherapy-treated patients. As macroscopic observation may overlook symptoms during infusion, we focused on skin temperature changes at puncture sites and studied thermographic patterns related to induration or necrosis caused by extravasation.

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METHODS: Outpatients undergoing chemotherapy using peripheral intravenous catheters were enrolled in this prospective observational study. We filmed and classified infrared thermography movies of puncture sites during infusion; ultrasonography was also utilized at puncture sites to observe the subcutaneous condition. Multiple logistic regression analysis was performed to examine the association of thermographic patterns with induration or necrosis observed on the next chemotherapy day. Differences in patient characteristics,

puncture sites, and infusions were analyzed by Mann-Whitney's U test and Fisher's exact test according to thermographic patterns.

RESULTS: Eight patients developed induration among 74 observations in 62 patients. Among six thermographic patterns, a fan-shaped lower temperature area gradually spreading from the puncture site (fan at puncture site) was significantly associated with induration. Ultrasonography revealed that catheters of patients with fan at puncture site remained in the vein at the end of infusion, indicating that the infusion probably leaked from the puncture site. Patients with fan at puncture site had no significant differences in characteristics and infusion conditions compared with those with the other five thermographic patterns.

CONCLUSION: We determined that fan at puncture site was related to induration caused by extravasation. Continuous thermographic observation may enable us to predict adverse events of chemotherapy.

Reference:

Oya, M., Murayama, R., Oe, M., Yabunaka, K., Tanabe, H., Takahashi, T., Matsui, Y., Otomo, E., Komiyama, C. and Sanada, H. (2017) Continuous thermographic observation may predict extravasation in chemotherapy-treated patients. *European Journal of Oncology Nursing*. March 25th. .

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