Hand foot syndrome (HFS) and hand foot skin reaction (HFSR) are common side effects of a number of cancer treatments, including fluorouracil, capecitabine, doxorubicin, docetaxel, sunitinib and sorafenib.

Hand foot syndrome is erythema of the palmar aspect of the hands and the plantar aspect of the feet accompanied by tingling, burning or painful sensation. This is primarily seen in patients receiving chemotherapy, such as doxorubicin, fluorouracil and docetaxel. The exact cause is unknown, but it is believed to be caused by concentrations of chemotherapy in the eccrine glands of affected patients.

Hand foot skin reaction is similar to hand foot skin reaction with the exception, that the condition is complicated by hyperkeratosis. This condition is most commonly found in patients receiving multitargeted kinase inhibitors (MKI), such as sunitinib and sorafenib. Unlike the chemotherapeutic agents mentioned, the MKI are not found in the eccrine glands of affected patients. Because an overlap in targets for MKI such as sorafenib and sunitinib lies in vascular endothelial growth factor receptor (VEGFR) and platelet-derived growth factor receptor (PDGFR) inhibition, HFSR may be an indirect effect of this. Inhibition of VEGFR and PDGFR could prevent vascular repair mechanisms from functioning properly, thereby causing HFSR in high pressure areas, such as the palm of the hands and the soles of the feet. Both conditions can make it difficult or painful to carry out activities of daily living (ADL). For this reason, it is important for nurses to be diligent in managing and minimizing these side effects.

Prior to the initiation of therapy, a comprehensive assessment of the patient should include a thorough examination of the skin’s condition. The nurse should also assess the likelihood of a patient developing HFS or HFSR based on patient social, work and home life. Patients whose jobs require a significant amount of walking or hand friction are at greater risk of developing HFS and HFSR. Caustic cleaning solutions and hot water are also contributors to the development of these skin toxicities.

Educating the patients is an important step in management of HFS and HFSR. When nurses teach patients about the purpose and the side effects of antineoplastic agents and multikinase inhibitors, emphasis of HFS and HFSR and the need to be proactive upon initiation of therapy in taking measures to prevent or minimize them. Avoiding the use of hot water, contact with caustic chemicals, tight fitting shoes and rubber gloves, can reduce the risk of developing HFS and HFSR.

Patients should also be taught to recognize the signs and symptoms of HFS and HFSR. HFS and HFSR are graded according to severity (Table I).

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<tr>
<th>TABLE I</th>
<th>HFS AND HFSR TOXICITY GRADING</th>
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<td><strong>GRADE 1</strong></td>
<td>Minimal skin changes without pain, includes a redness to the palms of the hands and/or the soles of the feet and thickening of the skin (callous formation) on the hands of the feet.</td>
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<tr>
<td><strong>GRADE 2</strong></td>
<td>Skin changes and/or pain or burning that do not interfere with ADL</td>
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<tr>
<td><strong>GRADE 3</strong></td>
<td>Dermatitis or skin changes with pain that interfere with patient’s ADL, dressing, walking, grasping, can affect the significantly impact quality of life.</td>
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The second step in management of HFS and HFSR is prevention. Although there are few studies in management of HFS and HFSR, the few that have been conducted do indicate that there are some steps that can be taken to reduce their frequency and severity.

An abstract published in the Journal of Clinical Oncology in July 2005, reports that the use of a frozen glove on one hand worn during infusion of docetaxel with the ungloved hand acting as a control, greatly reduced the number of patients reporting grade 1 and grade 2 skin toxicity, post infusion (27% vs 59% respectively). A vast majority of the patients (86%) reported satisfaction with the treatment.

Patients should be proactive in the use of topical skin moisturizers as prophylaxis in preventing HFS and HFSR. The moisturizers can contain shea butter, lanolin or a number of other ingredients to protect the skin. Topical agents should be encouraged after washing hands or exposure to any activity that may cause the skin to become dry or chapped.

Should patients develop HFS or HFSR, management ranges from topical treatment, pain management, dose reduction and treatment interruption. Management depends on the grade of the toxicity listed previously.

Grade 1 toxicity can be managed with topical moisturizers, some with urea 20%-40% or 6% salicylic acid if hyperkeratosis is present, with increased frequency and reinforcement of teaching of proactive steps to prevent exacerbation of the condition. Patients may wish to wear cotton gloves and socks at night to retain moisture. Nurses should follow up with the patient in two weeks time to assess the effectiveness of treatment.

Grade 2 toxicity’s management should continue as that of grade 1, possibly adding 0.05% clobetasol ointment to erythematous areas twice daily, topical lidocaine 2% solution for pain relief, possible systemic pain relievers. Consultation with the physician regarding possible dose reduction until the condition improves to grade 1 or 0, is warranted.

Grade 3 toxicity management should continue as that of grade 2 management, with physician ordered treatment interruption until grade 1 or 0 levels is attained. Continuation of treatment would then continue at a reduced dose, monitored carefully. Resumption of therapeutic dose may resume, if toxicity does not recur.

Assessing HFS and HGSR reaction can be difficult if triage is done by phone. Adaptation of modern technology can facilitate a more definitive diagnosis. Cellular telephones with cameras, digital camera photos downloaded to computer e-mail messages and the computer video cameras can assist the nurse in assessing the patient, making proper diagnosis and treatment advice more accurate.

The goal of the nurse in managing HFS and HFSR toxicities is to educate the patient as to the effects of the treatment that the physician orders and the steps to take in preventing HFS and HFSR, reducing the severity of these skin toxicities and documenting the patient’s response. HFS and HFSR reaction can severely interfere with patient quality of life, making walking, dressing, bathing and other activities of daily living difficult and painful. Working with the physician and the patient, the nurse is uniquely qualified to intervene to help achieve optimal patient outcome, while minimizing impact on daily living.
References
