The Usefulness of a Fluorescent Technique Using Indocyanine Green for Evaluating Patterns of Lymph Flow and Facilitating Sentinel Node Biopsy in Patients with Skin Cancer

Yoshitsugu SHIBAYAMA, Juichiro NAKAYAMA, Shinichi IMAFUKU

Department of Dermatology, Faculty of Medicine, Fukuoka University

Abstract

Background: Sentinel lymph node biopsy (SLNB) is an established minimally invasive procedure for detecting micro-metastasis in regional nodes in patients with cutaneous malignancies, including malignant melanoma. Because in some cases they cannot be detected and in others regional metastases are found despite negative sentinel lymph nodes (SLNs), a more accurate means of detecting them is needed.

Methods: We evaluated the usefulness of a fluorescent technique using indocyanine green (ICG) in combination with conventional tracers, namely blue dye and radioisotopes, for SLNB in 26 patients with skin cancers. Furthermore, we evaluated the correlation of primary site and the anatomic pattern of lymph flow draining into basin using ICG technique.

Results: In 19 cases (73%), more SLNs were detected with ICG than with the conventional tracers. The average number of SLN using conventional tracers with or without ICG was 3.9 versus 2.9 per case, respectively ($p < 0.01$) and 3.3 versus 2.4 per basin, respectively ($p < 0.01$). The average number of basins detected per case was 1.24 and 1.08, respectively ($p = 0.043$). We found a single flow in subjects with distal limb primary lesions, whereas subjects with proximal limb and trunk lesions tended to have more than two lymph flows draining into basins ($p = 0.002$).

Conclusion: The ICG technique may minimize overlooking of SLNs in patients with lesions on sites with multiple lymph flows such as the proximal limb and trunk, as well as head and neck.

Key words: Skin cancer, Sentinel node biopsy, Indocyanine green, Lymph flow