Histopathological approach of sentinel lymph node biopsy examination

KEYWORDS: Sentinel Lymph Node Biopsy; Neoplasm Staging; Immunohistochemistry

Sentinel lymph node (SLN) examination has becoming one of the most advantageous and useful tools for more precise staging procedure of variety of solid malignancies, especially malignant melanoma, breast cancer and recently, thyroid cancer. With preoperative radioactive lymphoscintigraphic mapping, followed by intra- and postoperative histopathological examination of SLN, it is possible to significantly improve detection rate of regional lymph node metastases. Furthermore, using combined serial sectioning and immunohistochemistry, 65% of patients with malignant melanoma and 10%-15% of breast cancer patients that were initially node negative are generally found positive for SLN metastases. Concerning the possibility of understaging SLN positive patients, the following issues arise for all solid malignancies: frozen section examination should include 1-3 slices per node, depending on the size; paraffin-embedded samples require intensive routine histopathological workload with serial sectioning and tumor-specific immunohistochemistry on at least 3 layers, including 30%, 50% and 75% of SLN thickness, with expectation of less than 9.5% of missed metastases, which appear to be time- and cost-effective. Eventual improvements of detection accuracy could be obtained by cell separation technique and pellet examination, as well as with high sensitivity techniques, especially RT-PCR, but both are still remaining to be evaluated for a routine procedure of standard samples. While SLN negativity in breast cancer patients implies almost certain metastases-free lymph nodes status, the same, still, does not rule-out possibility of false negativity in melanoma patients. Overall, regardless of the extent of histopathological labor, SLN examination significantly improves accurate staging of solid malignancies, updating the adequacy of treatment modalities, with major improvements still remaining to develop.

Adverse reactions to isosulfan blue dye and patent blue dye during sentinel lymph node mapping

KEYWORDS: Sentinel Lymph Node Biopsy; Neoplasms; Rosaniline Dyes + adverse effects

The sentinel node hypothesis is predicated on the fact that a metastasis will traveled on a direct path from the primary tumor through the efferent lymphatic channels to the first draining lymph node in the regional lymphatic basin, the sentinel node (1). The challenge for implementation of sentinel lymph node biopsy (SLNB) is to develop a reliable minimally invasive technique that identifies all possible sentinel nodes (2). Lymphatic mapping with blue dye and sentinel lymphadenectomy is being increasingly used in the management of patients with melanoma, breast cancer and other solid tumor of epithelial localization (1).

The intraoperative method of lymphatic mapping and sentinel lymph node biopsy is rapidly becoming the preferable method because it provides accurate staging the axilla with low morbidity in patients with carcinoma of the breast (3,4). Also, this technique is a quality alternative to axillary dissection for breast cancer (5). Namely, it has recently been reported that selective sentinel lymph node biopsy can spare about 80% of patients with solid tumors from radical lymph node dissection (6), because SLN accurately reflects the status of the axillary nodes in patients with early-stage breast cancer (7). That is why SLN mapping is gaining widespread acceptance (7).

The lack of complications and the short time needed to perform this technique are attractive features (8). Identification of the SLN requires the use of different vital dyes (isosulfan blue dye, patent blue dye) and/or (99m) Tc-labeled colloid to trace the lymphatic drainage of a neoplasm (9).

Reviewing the actual literature on the adverse reactions to isosulfan blue and patent blue dye during SLN mapping for epithelial malignancies, we have analyzed the different reports on spectrum of mild to severe reactions, which have to be promptly recognized and, sometimes, aggressively treated.

Isosulfan blue (IB) has usually demonstrated a 1.5% incidence of adverse reactions. All the reactions are of an allergic type. Localized swelling at the site of administration and mild pruritus of hands, abdomen and neck have been reported within several minutes following administration of the drug. A