Successful Sentinel Lymph Node Biopsy from a Case of Breast Carcinoma Using Isosulfan (Blue Dye)

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Sentinel lymph node (SLN) biopsy in breast cancer is an emerging technique that decreases surgical morbidity. SLN was successfully identified as blue node with blue lymphatic after intradermal injection of isosulfan. The breast tumor was clinically palpable having a size of 4cm in upper and out quadrant of right breast with non palpable axillary lymph nodes. The tumor malignancy was documented pre-operatively by excision biopsy. SLN biopsy offers an ideal staging procedure for early breast cancer patients. SLN biopsy is a simple, inexpensive and accurate procedure in breast cancer patients whose axillary nodes are non-palpable.

Key words: Breast cancer, Sentinel lymph node, isosulfan
Introduction

Nodal status is the first most important prognostic factor in breast carcinoma and it has a major influence when decisions are made about surgery and systemic treatment. The other mode of assessment of axillary nodal status include physical examination (Sorens, 1988). Axillary dissection has been used but there has been rational claims that this method has no therapeutic benefits in node negative patients, who are at risk of its side effects, most notably lymphoedema, and to a lesser extent neural damage (Ivena, et al., 1992). The procedure is also associated with significant morbidity including shoulder dysfunction. The other factor seems to be the ability of the pathologist to retrieve the nodes from axillary fat (Osrem, 1988). This has brought the concept of sentinel lymph node biopsy (SLNB). In recent years SLNB with isosulfan (blue dye) has evolve into safe and effective alternative to axillary dissection in patients with breast carcinomas. Sentinel lymph node is defined as the first lymph node receiving lymphatic drainage from a tumor. Dye directed SLNB from breast cancer provides accurate staging with low mortality (Collins, et al., 2000). The status of the sentinel lymph node can reflect the status of other lymph node in breast cancer. SLNB has emerged as a potential alternative to routine axillary dissection in clinically node negative early breast cancer. Sentinel lymph node is not only a prognostic indicator but it also dictates whether the patient should receive further surgery and adjuvant chemotherapy (Sakorafas and Tsilou, 2000). The paper reports the successful try of SLNB for the first time with isosulfan (blue dye) in breast cancer patient.

Materials and Methods

Patient: The age of the patient was 50 years, the breast tumor was clinically palpable having a size of 4cm in upper and outer quadrant of the right breast with no palpable axillary lymph nodes and no distant metastatic disease. Tumor malignancy was documented preoperatively by excision biopsy (Fig. 1).

Fig. 1: histology of breast carcinoma (H and E x 200)

Blue dye mapping technique: Under general anesthesia, an intradermal injection of isosulfan 3ml (1%) was given in the previous scar as the patient underwent excision biopsy 21 days back and there was residual tumor. After the injection a gentle circular motions of the breast were performed to improve blue dye axillary diffusion. A minimum 10 minutes rest period was observed before proceeding sequence of surgical procedure for mastectomy followed by sentinel node removal with completion of standard axillary (level I and II) clearance. The harvested sentinel node and non sentinel nodes were sent separately to pathologist.

Results and Discussion

In this study, we made a trial of isosulfan blue dye to map the sentinel lymph node. The sentinel lymph node was successfully identified as blue dye with blue lymphatics (Osrem, et al., 2000). No allergic blue dye induced reaction was observed however blue staining of urine and stool for 24 hours was observed. These effects last no longer than 24 hours and were harmless.

Sentinel lymph node biopsy is an alternative to standard axillary lymph node dissection. The sentinel lymph node is the first lymph node in the different lymphatic drainage pathway from a tumor. The concept of regional selective lymphadenectomy with lymphatic mapping was introduced in 1982 in early-stage melanoma (Morton, et al., 1982) Several non-toxic mapping dyes (isosulfan, patent blue-V) have been used. Giuliano et al. (1994) applied this technique to breast cancer. The goal of the axillary sentinel lymphadenectomy in breast cancer is to offer a good compromise between low, acceptable morbidity and a high degree of staging accuracy to facilitate selection of patients for adjuvant therapy. This recent advance in the surgical management of breast carcinomas primarily concerns non palpable and non loco primary tumors, potentially free of axillary involvement. Sentinel lymph node biopsy is originally described in perineal carcinoma (Cabanans, 1977). Identification of a sentinel lymph node that is free of metastatic tumor cells eliminates the necessity of performing a standard axillary lymph node dissection with its attendant morbidity (Boneh, et al., 2000). Using vital blue dyes, mainly isosulfan blue and patent blue-V, sentinel lymph nodal positive rates ranged from 65.6 to 93.3% (Giuliano, et al., 1987). Other studies suggest that the SLN can be identified in about 83.94% using vital dye alone (Bobin, et al., 1996). Blue dye is a visual guide leading to the sentinel lymph nodes (blue nodes). Kem (1996, 2001) reported the use of subareolar(SA) injection of isosulfan blue dye to identify breast sentinel lymph node. The SA injection provides direct access to a high density of subdermal breast lymphatics which results in rapid and reproducible transport of vital dyes to axillary nodes. The use of dye only was advocated because of its simplicity and accuracy. Iosulfan blue is a non-azo organic dye developed for subcutaneous injection to delineate the lymphatic channels. Several studies have been based on the suggestion of Borgstein et al. (1997), that breast parenchyma and the overlying skin share their lymphatics because they are embryonically related and hence the peritumoral intradermal or peritumoral injection of the staining agents are equivalent (Lincham et al., 1999, Kimberg et al., 1999).

SLN biopsy with isosulfan is a simple and inexpensive procedure and can be used for patients with invasive breast cancer having less than 1cm and clinically negative axilla.

References


Kanwal et al.: Breast cancer sentinel lymph node isosulfan


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