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CORRESPONDENCE

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Sir,

Anaphylaxis to patent blue during sentinel node biopsy

to patent blue was reported in the 1960s and 1970s when this dye was popular for lymphography.[1] Since the advent of the sentinel node biopsy, as part of the treatment of patients with melanoma or breast cancer, the use of patent blue has been increasing.[2,3]

The concept of a sentinel lymph node is based on the orderly progression of tumour cells within in the lymphatic system. Metastasis to regional lymph nodes is not a random event, and the primary draining or sentinel node will be the first to contain metastases. Biopsy of this node can accurately predict involvement of other regional nodes.

There are two methods of identifying the sentinel lymph node: radiocolloid mapping and vital blue dye mapping. Radiocolloid lymphatic mapping is performed by injecting technetium 99m labelled microcolloidal albumin of sulphur colloid subcutaneously or intradermally around the tumour site. Exploration includes peroperative detection of the sentinel node by gamma probe.

Vital blue dye mapping is performed peroperatively. The two agents described in the literature are Lymphazurin (isosulfan blue) and patent blue dye. Biochemically, these are essentially the same agents. Compared to other agents they directly enter the lymphatic system after sub/intradermal injection without spread to the surrounding tissue.

Patent blue is widely used as industrial dye in textiles including carpets, in cosmetics, in detergents and in medical products such as laxatives. Patent blue has been used as a food colourant (E 131) but was removed from the market in 1974. The main medical use of patent blue as mentioned earlier was lymphography. Other medical uses include the tracing of fistulas and identification of dental caries plaques. Today its main medical use is during the sentinel lymph node biopsy.

We present a severe complication of patent blue used for lymph node mapping during the sentinel node biopsy procedure. A 52-year-old male was submitted for sentinel node biopsy due to a melanoma on his back. After the induction of general anaesthesia 1 ml of patent blue dye was injected intradermally with a 25-gauge needle at the site of the earlier removed melanoma to identify the sentinel node. Fifteen minutes later, he presented with bronchospasm, a decrease in saturation and shock leading to termination of the operation. After removal of all sterile sheets a generalized urticarial reaction was seen. He received Tavegil and Prednisolone and recovered rapidly. He was kept in the intensive care unit for 24 hours without any further event. Skin prick test with patent blue was positive while all other agents used during the anaesthesia showed a negative skin prick test.

The exact mechanism of anaphylaxis to patent blue is unknown. Kalimo *et al.*[4] suggested an immediate type hypersensitivity reaction and that the widespread use of this dye in many daily products causes sensitization. Our patient had never knowingly had contact with patent blue. He did however have a positive allergic diathesis including zinc oxide tape. Skin tests to patent blue have been reported when it was frequently used for lymphography.[4] In the normal population 2.8% showed positive test results. Most positive test results occurred in people with a known allergic reaction to any kind of agent.

Since patent blue may be used more frequently one should remember the risk of triggering allergic-like reactions including anaphylaxis. Our advice is, when presented with patients with a positive allergic history, to test pre-operatively by means of the previously mentioned skin test. In case of a positive test result one should avoid using patent blue for identification of the sentinel lymph node.

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Sir,

Implementation of the sentinel node biopsy: a survey among surgeons in the Netherlands

Sentinel node biopsy (SNB) is being evaluated as a technique-of-choice for accurate staging of the axilla in breast cancer patients.[1] Patients without clinical involvement of the axilla may be spared axillary lymph node dissection when the sentinel node is disease-free.[2] SNB may reduce axillary trauma, post-operative morbidity and hospital stay.[2,3] There is, however, the possibility of a false-negative result and it is not yet established what false negative rate might be considered acceptable.[4] Patients with a clinical negative axilla and a small, or even impalpable lesion in the breast may benefit the most from SNB, as the chance of axillary metastasis and need for subsequent therapy is low.[5]

We report the use of SNB in the Netherlands in 1999 following a survey sent to all Dutch surgical groups operating on breast cancer patients. The response rate was over 90%. SNB was performed in 74% of the training hospitals and 31% of the non-training hospitals. SNB was already considered the standard treatment for staging of the axilla in 43.6% of the training hospitals, and in 12.9% of non-training hospitals.

There was little doubt about the necessity for a controlled learning curve among surgeons starting to implement this new technique. A controlled learning curve was defined in terms of performing SNB combined with complete axillary lymph node dissection (AND) in one operating session. All surgeons considered it necessary to perform SNB combined with AND for surgeons doing the first 10 SNBs. However, in practice, 43% of surgeons who had performed less than 10 combined procedures were already omitting AND. In fact, 44% of surgeons who had performed less than 25 combined procedures were performing SNB alone; as were 70% of surgeons who had performed less than 50 combined procedures.

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Many surgeons appear to be undertaking SNB with limited training and experience, thus having short learning curves. Seemingly eager to implement the SNB as a technique-of-choice, surgeons might be lacking sustained control over their procedure and their false-negative rates. There was no agreement on the number of combined procedures which were needed in order to perform SNB alone safely. Thus, what length of learning curve seems to be appropriate? Should surgeons cut short their learning curves, not yet having achieved controlled quality of SNB? Or should they combine SNB and AND and hence not obtaining the benefits of SNB, as a minimally invasive procedure?

Patients, on the other hand, are becoming well aware of SNB and may not be willing to undergo AND if only performed for the sake of a surgeon's learning curve. Especially so, since there are already clinics performing SNB without AND on selected groups of patients.

We were among the first to advocate and implement SNB. Initially, SNB was combined with AND for over 100 procedures, achieving a false-negative rate of 5.3% in clinically impalpable breast cancer patients. Hands-on workshops were organized to introduce SNB to fellow surgeons in a clinical setting on consented patients. The participation of colleagues from the departments of Radiology and Nuclear Medicine offered key viewpoints on the correct performance of the procedure. Following the workshops, colleagues about to implement SNB were visited in their own hospital. By implementing SNB within the framework of the Breast Cancer Group South, an excellent means for tracing problems and for the control of the procedure were attainable. Therefore, we suggest the need for standardization of surgery and controlled implementation of SNB.

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