Comparative trial using superparamagnetic iron oxide versus Patent Blue dye for sentinel lymph node biopsy in Breast cancer surgery

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Background and Objective:

Superparamagnetic iron oxide(SPIO) is an newly FDA approved tracer for sentinel lymph node(SLN_ biopsy in carcinoma of breast, which does not require the involvement of Nuclear medicine Department.

The objective of this study is to audit and compare the result with blue dye only technique.

Method:

We conducted a retrospective study comparing the result of using SPIO versus versus patent blue dye as tracer for identification of SLN on the same patient with breast carcinoma. Mastectomy patients in Pamela Youde Nethersole Eastern Hospital who were indicated for SLN biopsy but had difficulty in accessing the nuclear medicine department were recruited. Primary outcome is the lymph node detection rate. Secondary outcomes include concordance rate, positive sentinel lymph node rate, and metastatic SLN concordance rate.

Results:

Between June 2019 to April 2020, 20 patients received SPIO injection preoperatively for SLN biopsy and they also have patent blue injection immediately after general anaesthesia. All were female patients, with mean age 66(range 44-92). Total 67 SLN were harvested. 65 lymph nodes were stained with SPIO and 32 lymph nodes were stained with Blue dye(P=0.007). The detection rate was 100%(21/21) and 95.2%(20/21) in SPIO and Blue dye arms respectively. 4(20%) patients required axillary dissection due to positive SLN, in which 2 are SPIO stained only and 2 are both SPIO and Blue dye stained. Thus the metastatic concordance rate was 50%

Conclusion:

SPIO for mastectomy patient has statistically significant higher SLN detection rate, increase number of SLN harvest, higher positive SLN but low metastatic concordance when compared with patent blue. It will be a promising agent for center with deficient nuclear medicine service. More case recruitment and longer follow-up will be required to look for axillary LN recurrence rate.