

Does Lymphovenous Bypass for Breast-Cancer Related Lymphedema Impact Bioimpedance Spectroscopy Measurements?

Background

- Breast cancer related lymphedema (BCRL) is common after treatment of breast cancer
- Bioimpedance spectroscopy (BIS) measures tissue resistance to an electrical current to determine extracellular fluid and is used as an objective measurement of BCRL
- Lymphovenous bypass (LVB) is a surgical method to treat refractory BCRL

Aims

- We aimed to determine if BIS measurements can accurately assess reduction in BCRL in patients who underwent LVB

Methods

- Patients who underwent LVB for BCRL from Jan. 2015-Dec. 2018
- All patients underwent baseline BIS prior to oncologic surgery with serial BIS measurements during follow-up visits
- LVB type and number of anastomoses determined at surgeon's discretion
- Differences in BIS over time were compared using a t-test
- Linear regression used to evaluate the correlation between number of LVB performed and BIS change

Results

Age at diagnosis (mean, range)	44.5 (36-60)
Tumor size in mm (mean, range)	21.4 (6-52)
Time from Cancer Surgery to LVB (mean, range)	21 months (10-33)
Time from LVB to Most Recent BIS (mean, range)	22 months (12-40)
BMI >30 (% , n)	22.2 (2)
ALND (% , n)	77.8 (7)
SLNB (% , n)	22.2 (2)
Radiation therapy (% , n)	77.8 (7)
Taxane therapy (% , n)	77.8 (7)

Table 1. Clinicopathologic characteristics

Lymphedema Stage	Pre-LVB, n (%)	Post-LVB, n (%)
No evidence of BCRL	0	5 (55.5)
Subclinical	2 (22.2)	0
Stage 1	6 (66.6)	4 (44.5)
Stage 2	1 (11.1)	0
Stage 3	0	0

Table 2. Clinical stage of BCRL pre- and post-LVB.

Results

- 9 patients underwent LVB for BCRL
- Average change pre-LVB 4-SD
- Post-LVB 3-SD change after 6 mo, 2-SD change after 20 mo
- No correlation between number of LVB anastomoses performed and degree of BIS change
- 75% of patients with persistent clinical lymphedema reported subjective symptom improvement

Discussion

- After LVB BIS measurements significantly decrease
- Although 45% of patients had persistent lymphedema, 75% of those patients reported symptomatic improvement thus aligning more accurately with decrease in BIS measurements
- The number of LVB performed did not correlate with the degree of BIS change pre and post-LVB
- Future directions include higher stage BCRL intervention, greater number of patients enrolled, longer follow up
- BIS may be used as a tool to monitor for response to LVB