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### Clinical and Laboratory Surveillance, Microbe Prevalence, and Antibiotic Sensitivities for Cellulitis in Extremity Lymphedema

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**Objectives:** Cellulitis is one of the most devastating complications for patients with extremity lymphedema. Very few studies have performed an in depth clinical analysis of cellulitis in lymphedema patients. The objectives of this study were to investigate the clinical and laboratory signs for the diagnosis of cellulitis and evaluate the microbial profiles and sensitivity of antibiotics in extremity lymphedema patients.

**Material and Methods:** From 2011 to 2018, cellulitis in the setting of extremity lymphedema confirmed by lymphoscintigraphy were retrospectively reviewed, among a cohort of 420 patients with extremity lymphedema, treated at Chang Gung Memorial Hospital. Episodes of cellulitis were accrued with general demographics, lymphedema staging, clinical symptoms, white cell counts, inflammatory markers, bacterial cultures, initial antibiotic regimens, changes in antibiotic regimens, and durations of treatments. Non-parametric statistics were used for data analysis.  $P < 0.05$ .

**Results:** 53 patients presented with at least one instance of cellulitis requiring admission, for a total of 127 separate episodes of cellulitis. Patient demographics skewed female (50/53; 94.3%) with a median age of 67 (58-71) years old. Secondary lymphedema of the lower limbs comprised 39 (73.5%) of the diseased extremities. Clinically, nearly all cases of cellulitis presented with increased circumference of the affected limb (123/127 episodes; 96.8%). Median follow-up time was 63.9 (38.5- 84.6) months. Blood cultures were obtained in 78 (61.4%) episodes, with 9 returning positive (12.5%). Tissue cultures were obtained in 6 instances, with 2 (33.3%) resulting positive. Comparatively, C-reactive protein had the highest sensitivity, with abnormal levels in 77.7% (84/108) of the cases. In the limited positive cultures, *Streptococcus agalactiae* was the most frequently isolated bacteria (6/11; 54.5%). Initial antibiotic therapy typically consisted of a beta-lactamic or first-generation cephalosporin, either alone or combined with another gram-negative antibiotic (88/126; 69.8%). One third of the cases (42 instances) required a change in antibiotics regimen. Univariate analysis revealed patients with a circumferential difference over 40% and patients with lymphoscintigraphy stages 5 and higher had an increased number of cellulitis episodes ( $p < 0.05$ ).

**Conclusions:** The most sensitive indicators of cellulitis were the presence of increased limb swelling and elevated C-reactive protein levels. Positive culture rates were low, contributing to the frequent changes in antibiotic therapy. Cellulitis recurrence rates after admission for antibiotic treatment were high in this series of lymphedema patients.