Abstract Title: Cutaneous Functional Units: Allocating OT Services & Influencing Practice

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Objective:
• Develop knowledge of how CFUs can inform occupational therapy practice and resource allocation.

Abstract:
Introduction:
According to literature, burn injury severity is determined by total body surface area (TBSA). However, TBSA fails to emphasize the importance of the location of the burn, and how subsequent scar tissue formation could affect movement and function. Alternatively, cutaneous functional units (CFUs) are skin segments that accommodate for movements, and are common sites of burn scar contracture. Literature suggests there are 214 CFUs on the body—81 are present on each upper extremity, with 73 of those present on the hand. Bilateral hands account for 68% of the body’s CFUs, despite accounting for 5% of TBSA.
Hand and upper extremity burns require extensive specialized occupational therapy (OT) services, including therapist-assisted scar and soft tissue elongation techniques to prevent burn scar contracture and deformities, and to establish motion within functional limits in all possible planes to successfully facilitate return to functional hand performance.
Allocated OT treatment time should be based on the functional implication of the burn and the need for OT-assisted elongation techniques as informed by CFU involvement rather than TBSA. The purpose of this study was to capture the time required to complete manual elongation techniques to the hand with additional data regarding the end performance of hand skills.

Methods:
This was a one-year retrospective single-center study from May 2020 to July 2021. Eligible patients were identified based on presence of bi- or uni-lateral hand burns, a hospital LOS ≥ 2 days or had an outpatient burn therapy appointment within one week after injury.
All OT notes of eligible patients were reviewed to determine the number of OT sessions that utilized therapist-assisted elongation techniques.
Education was provided to burn OTs on the use of an author-created Passive Motion Scoring Grid. Burn OTs used the numerical categories on the grid at the beginning and end of the elongation session to record patient movement, with higher numbers indicating more motion achieved. Other data collected included perceived limitations of movement (i.e. anxiety, soft and scar tissue tightness, application of wound dressings).
Cognitively alert patients were asked to complete subjective patient report of “feelings of tightness” from the beginning to the end of hand elongation.
No changes of burn OT services were performed. All medical/rehabilitation protocols were maintained that were established prior to start of study.

Results:
50 patients were included in this study. The average age was 48.91 years, 72% were male, 48% were Black or African American and 38% were white. 52% of patients had past psychiatric or drug-use history. 33 patients had unilateral and 17 had bilateral hand burns all due to thermal burns. 80% required skin substitutes.

Patients with unilateral hand burns had on average 7.02% TBSA burned. On average, 34.27 CFUs on the hand were affected. These patients received an average of 18.0 OT sessions, with 29.5% of sessions including therapist-assisted elongation techniques which required an average of 27.2 minutes per session.

Patients with bilateral hand burns had an average 21.28% TBSA burned. On average, 75 CFUs in the hands were affected. These patients received an average of 24.35 OT sessions, with 43.9% of sessions including therapist-assisted elongation techniques which required an average of 38.7 minutes per session.

Data from the Passive Motion Scoring Grid and patient report was collected for three patients from June to July 2021. At the end of each elongation session for all patients, passive movement improved each session, and in all but one instance patients reported feeling “looser” at the end of each elongation session.

Conclusions:
CFUs can be utilized to determine potential contracture areas, which requires skilled burn OTs to utilize hands-on techniques to increase skin pliability and movement necessary for return to function. Given 70% of burns affect the upper extremities, and with the extensive CFU presence in the hands, more therapist time is required to achieve positive functional outcomes for patients with hand burns. This data could lead to justification for increasing staffing to meet patient need.

Disclosures:
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