

Large changes in body fat mass during the treatment of major burns injuries.

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The aim of this study was to evaluate changes in body fat stores in major burn injuries as determined by bioelectrical impedance. Nutritional needs directing the provided diet was assessed by indirect calorimetry.

METHOD:

Eighteen patients (15 males) with burn injury, covering from 10 to 80%TBSA (mean $\pm$ SD) $33.1 \pm 17.6\%$ were investigated on day 1, 3, 5, then once weekly until 14th week after the injury. The patients were divided into large burns ($>30\%$ TBSA) and smaller burns ($<30\%$ TBSA). Patients were treated with early surgery and grafting. Nutrition was based on an enteral strategy, to which, when failing, parenteral nutrition occasionally was added. Resting energy expenditure was determined by indirect calorimetry (IC) (Deltatrac R) and lean body Mass (LBM) and Fat Mass (FM) by bioelectrical impedance analysis (BIA), (**Bodystat[®] MultiScan 5000, Bodystat Ltd, UK**).

RESULTS:

Mean age and LOS was 38 ± 17.4 years (range 14 – 71), and 33.1 ± 17.6 days, respectively. Three (age 20, 70, and 71) died of MODS on day 6th, 13th and 27th post burn. Four patients had inhalation injury. Very early after the burn, fat mass was in the normal range and similar between groups, 7.0 ± 6.8 kg and 6.0 ± 5.7 kg (mean $\pm$ SD) for the large and small burns, respectively. Thereafter, in the larger burns group fat mass was depleted to almost 0 values already at day 5. Fat mass then slowly restituted and reached pre-burn values at week 8 or 9. Thereafter it further increased and reached almost twice normal levels at 14 weeks. A different pattern was observed for the smaller burns. In this group the fat mass decreased to zero levels after 2 or 3 weeks post-burn and remained low during the whole observational period.

CONCLUSION:

These results indicate that severe catabolism is prevalent in this patient group especially early in the treatment course despite a nutritional strategy, which provides adequate number of calories. In the large burns the fat mass is increased to twice normal after 14 weeks. This finding suggests that these patients are either significantly over nourished in the late post burn period or that there is an altered fat metabolism post-burn.