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AZIENDA OSPEDALIERA DI RILIEVO NAZIONALE

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ASSOCIATION BETWEEN T-REGULARY CELLS AND OUTCOME IN PATIENTS WITH SEVERE BURN INJURIES. ASSOCIATION BETWEEN T-REGULARY CELLS AND OUTCOME IN PATIENTS WITH SEVERE BURN INJURIES.

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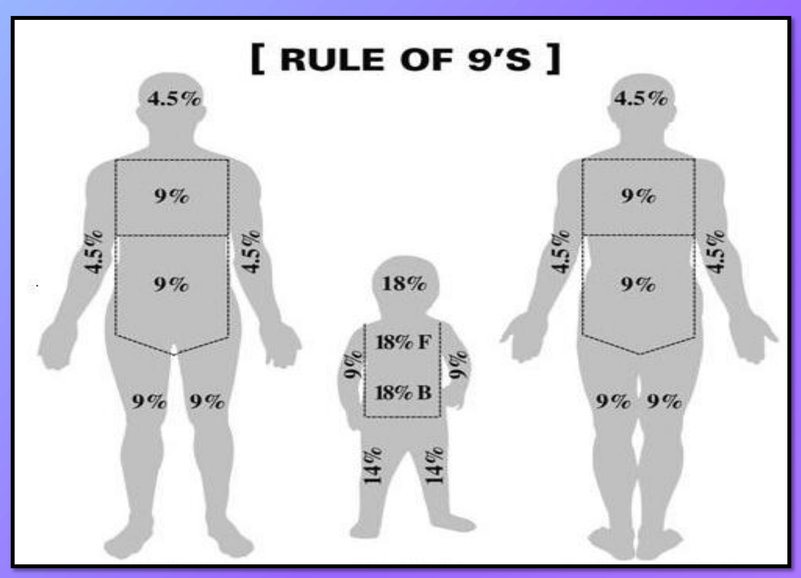
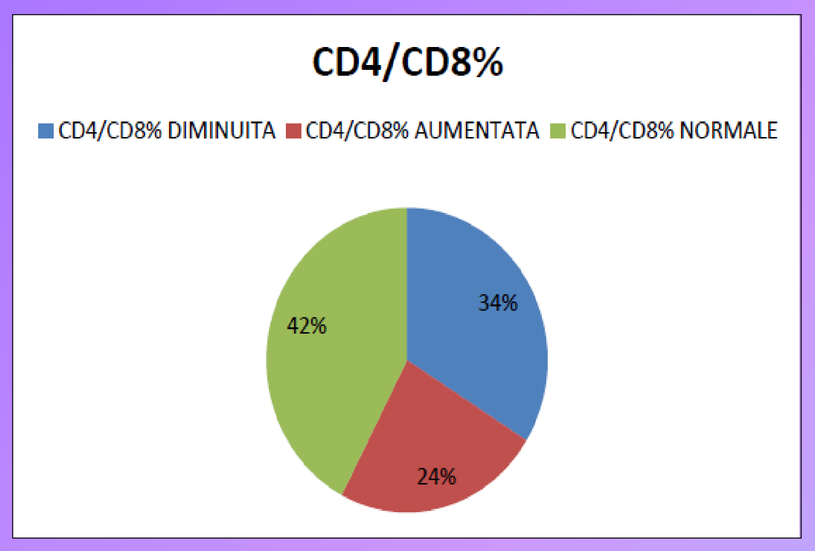
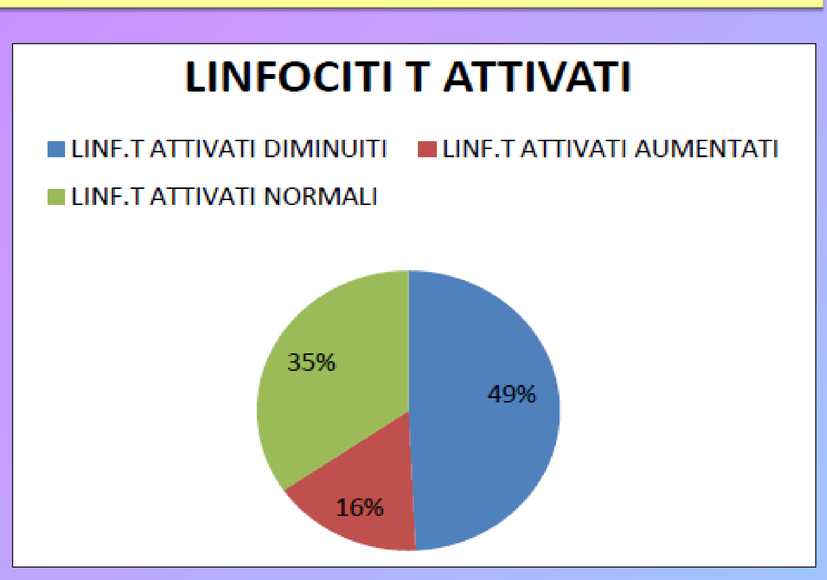
Background: Burn injury is the most devastating of survivable injuries and is a worldwide public health crisis. Burn injury is among the most severe metabolic stress a patient can sustain. A major burn leads to an inflammatory response and catabolism that, when compounded by burn wound nutrient losses, can lead to severe nutrition losses and deficiencies. These losses can impair immune function and wound healing and place burn patients at high risk for organ injury and mortality. Our aim is to demonstrate the correlation between T-regulatory cells and mortality in patients with severe burn injuries in order to find a new therapeutic approach.

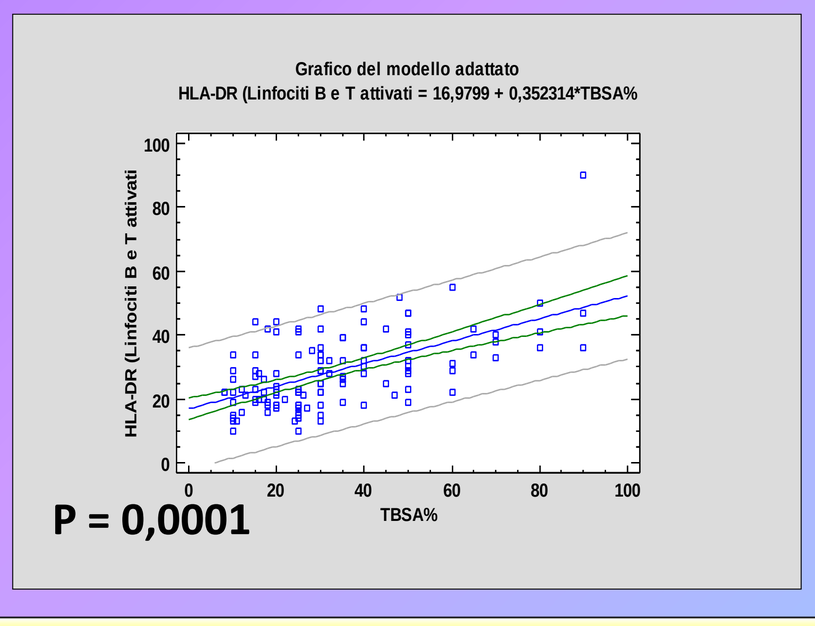


Patients and Methods. This is a retrospective observational study, 131 patients with severe burn injuries have been admitted in our Intensive Care Unit from June 2019 to March 2021. Patients aged between 11 and 97 years (mean age 55 years). TBSA between 8-90%(mean 30%), 76 males and 49 females. For each patient at acceptance blood samples were taken including blood count, electrophoresis, electrolytes, liver and kidney function indices, PCR, Pct and coagulation. The day after admission, a sample was carried out for the study of lymphocyte subpopulations on a peripheral smear. Evaluation of the patients' lymphocyte subsets was obtained by flow cytometry. Blood samples were performed daily, while PCR and PcT were performed at the entrance and after 7 days. Diagnosis of infection and septic shock was based on American College of Chest Physicians/Society of Critical Care Medicine criteria.

Results: 41 patients died (32% mortality among patients with TBSA>40%). 45 patients (36%) required IOT, of these 32 (25% of the sample) required vasopressors. TBSA,ABSI>8, IOT and the use of vasopressors increases mortality and morbidity. Our study shows that severe burns induce a marked decrease in HLA-DR expression, in the ratio of CD4 to CD8 and in the number of activated T lymphocytes, while B lymphocytes are generally increased. All this is associated with a worse outcome. According to what was observed in our cohort, an alteration of the expression of HLA-DR, of the activated T lymphocytes and of the CD4 / CD8 ratio was observed in the first days after the event, especially in deceased patients and with higher TBSA and ABSI. The reductive alterations of these parameters were particularly related to the extent of the burn (TBSA), and also showed a significant correlation with the length of stay (LoS) and mortality. It was not possible to establish a correlation between alteration of the lymphocyte structure and the risk of developing complications of an infectious nature.







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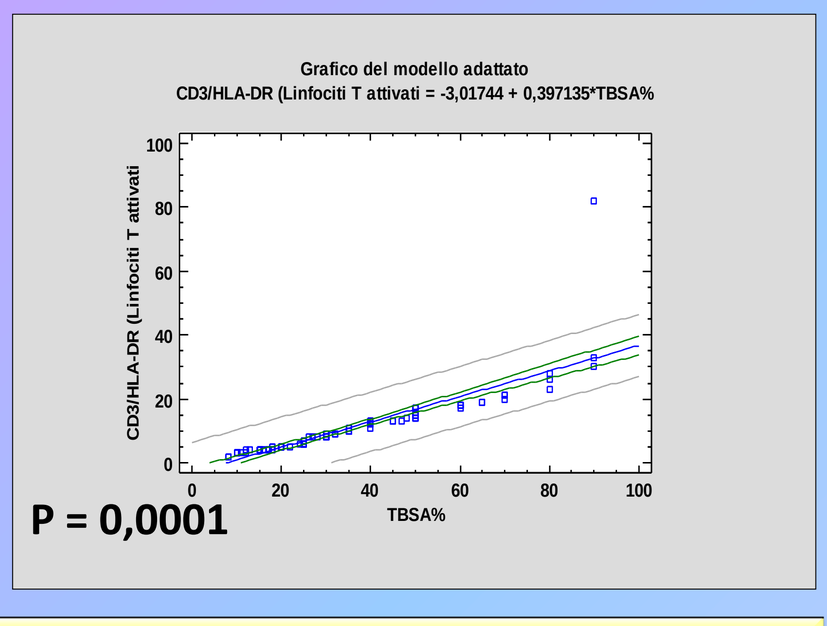

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Conclusion: In order to clearly delineate a relationship between the onset of sepsis and the different treatment strategies, a multivariate survey of large cohorts of patients is necessary

REFERENCES:
1-Schwacha MG. **Macrophages and post-burn immune dysfunction**. Burns. 2003;29(1):1-14.
2-Matsushima A, Ogura H, Fujita K, Koh T, Tanaka H, Sumi Y, et al. **Early activation of gammadelta T lymphocytes in patients with severe systemic inflammatory response syndrome**. Shock. 2004;22(1):11-5.
3-Schwacha MG, Daniel T. **Up-regulation of cell surface Toll-like receptors on circulating gammadelta T-cells following burn injury**. Cytokine. 2008;44(3):328-34.
4-Venet F, Tissot S, Debard AL, Faudot C, Crampe C, Pachot A, et al. **Decreased monocyte human leukocyte antigen-DR expression after severe burn injury: Correlation with severity and secondary septic shock**. Crit Care Med. 2007;35(8):1910-7.