Introduction:
In critically ill patients, occurrence of pain is frequent and usually correlates with worse outcomes, such as prolonged ICU length of stay (LOS) and mechanical ventilation. In this regard, pain leads to sympathetic activation, inflammatory mediators and therefore, potentially to organic dysfunction. The aim of this study is to evaluate the relationship between acute pain in critically ill patients and their association with acute kidney injury (AKI).

Methods:
Retrospective cohort with 6345 adults patients admitted between June 2013 and June 2016, from the ICU of Hospital Sírio Libanês Hospital in Sao Paulo (Brazil). Main exclusion criteria were: length of stay < 48h, coma and previous AKI. The predictor pain was obtained through daily electronic records according to numerical verbal scale (0-10). The outcome was defined as serum creatinine elevation equal to or greater than 0.3mg/dl and / or greater than 50% increase at any time after the first 48 hours in the ICU. The multivariate analysis was performed by Binary Logistic Regression through distinct groups of early or late predictive factors in relation to AKI.

Results:
After the exclusion of 3220 patients, the incidence of pain with numerical verbal scale equal to or greater than 3 points was 23.6%. The outcome occurred in 31.7% of the cohort. In the binary regression, using the more early predictive factors, sex and pain presented independent relation with the outcome - adjusted OR 1.24 (1.12-1.36) and 1.63 (1.34-1.98), respectively (p<0.001). In the analysis of late association factors, mechanical ventilation over 3 days - OR 4.71 (3.01-7.36), use of strong opioid - OR 2.7 (1.58- 4.60) and PCR- t over 5.2mg / dl - OR 2.27 (1.15-4.47) presented the highest positive association with AKI (p<0,001).

Conclusion:
Poor management of ICU pain is associated to worse outcomes, including increased risk to AKI. The search for an better pain management strategy in the ICU scenario should therefore be reinforced.