

CORRELATING INITIAL VENOUS ACID-BASE LEVELS AND ANION GAP
WITH EARLY OUTCOME OF MAJOR TRAUMA PATIENTS AT MULAGO
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ABSTRACT

Title

CORRELATING INITIAL VENOUS BLOOD ACID BASE LEVELS AND ANION GAP WITH EARLY OUTCOME OF MAJOR TRAUMA PATIENTS.

Background:

Trauma remains a tremendous cause of morbidity and mortality in most countries .Mortality from trauma still remains a major challenge despite substantial improvement in acute trauma care.

In Mulago Hospital trauma patient resuscitation to correct hypotension from blood or fluid loss still majorly relies on use of physiological parameters such as blood pressure, pulse rate, respiratory rate, urine output, Glasgow coma scale and oxygen saturation. However with such resuscitation monitoring methods, it is difficult to detect occult tissue hypoxia, due to occult hypotension.

This study explored the relationship between severity of trauma with biomarkers of tissue hypoxia and anaerobic respiration, and how these biomarkers relate to early clinical outcome.

Methods

Prospective observational non intervention study was carried out at Mulago accident and emergency unit. Major trauma patients were recruited into the study and the initial venous blood samples drawn for analysis of serum electrolytes Na, K, Cl⁻, HCO₃⁻, serum PH and anion gap and followed up for 2 weeks. Venous blood gas findings were correlated with patients' clinical outcome.

Findings of the study

Of the 93 major trauma patients recruited in the study, 49 patients (52.7%) were acidotic (PH less than 7.32), 39 patients (41.9%) had low bicarbonate (bicarbonate level less than 21 mmol), 54 patients (58.1%) had high corrected anion gap (anion gap corrected of 16 or more). We had 14 patients (15.1%) who developed secondary organ failure and 32 patients (34.4%) died.

Conclusion

Serum PH, serum bicarbonate and anion gap corrected were all found to have no correlation with injury severity score among major trauma patients. However serum PH, serum bicarbonate and anion gap corrected, were found to have significant association with mortality but not development of secondary organ failure.