Review Article

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Association Between Red Cell Distribution Width And Severity Of Pancreatitis

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1. Introduction

- Acute pancreatitis is defined as an acute condition presenting with abdominal pain, a threefold or greater rise in the serum levels of the pancreatic enzymes amylase or lipase and/or characteristic findings of pancreatic inflammation on contrast-enhanced CT. Acute pancreatitis may recur.
- The underlying mechanism of injury in pancreatitis is thought to be premature activation of pancreatic enzymes within the pancreas, leading to a process of autodigestion. Anything that injures the acinar cells and impairs the secretion of zymogen granules or damages the duct epithelium, and thus delays enzymatic secretion, can trigger acute pancreatitis
- The majority of patients will have a mild attack of pancreatitis, the mortality from which is around 1%.
- Severe acute pancreatitis is seen in 5–10% of patients and is characterised by pancreatic necrosis, a severe systemic inflammatory response and often multiorgan failure.
- In those who have a severe attack of pancreatitis, the mortality varies from 20% to 50%.
- The systemic inflammatory response probably helps to explain the potentially association between RDW and prognosis of AP.
- Several studies have shown that vascular endothelial cells, lymphocytes, neutrophils, and macrophages were activated when pancreatic acinar cells were damaged in early phase, releasing a large quantity of inflammatory cytokine such as phospholipase, protease, elastase, tumor necrosis factor, nitric oxide, interleukin-6 (IL-6), and IL-8.
- Oxidative stress and MAP kinase expands inflammatory response induced by inflammation factors, contributing to damage of pulmonary capillaries and alveolar epithelial cell through various channels.
- As a result, systemic inflammation impacts bone marrow function and iron metabolism, and inflammatory cytokines inhibit erythrocyte maturation, leading to newer, larger reticulocytes into the blood circulation, which correlates with RDW increase
- ncreased oxidative stress is able to increase RDW by reducing red blood cell (RBC) survival and releasing large premature RBC into the circulation.

2. Aim and Objective

To correlate the severity of acute pancreatitis with red cell distribution width at the time of presentation and outcome of the patient

3. Materials and Methodology

Source of data: Study was a prospective type which included all patients admitted in General surgery, Chengalpattu Medical College and Hospital with acute pancreatitis . The study was conducted during the period of January 2024 to June 2024.

3.1. Study design : Observational study for 6 months.

3.2. Study Centre : Department of General Surgery, Chengalpattu Medical College and Hospital .

Sample Size : 200.

3.3. Inclusion Criteria

- Patient admitted in Chengalpattu Medical College and Hospital during the period of January 2024 to June 2024
- Patient with Acute Pancreatitis
- Patient willing to give consent

3.4. Exclusion Criteria

- Nutritional Anaemia
- Autoimmune Hemolytic Anaemia
- Cytotoxic Chemotheraphy

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- Myelo Dysplastic Syndrome
- Dimorphic Anaemia
- Sickle Cell Disease
- Chronic Liver Disease
- Severe Kidney Disease
- Organ Transplantation

4. Methodology

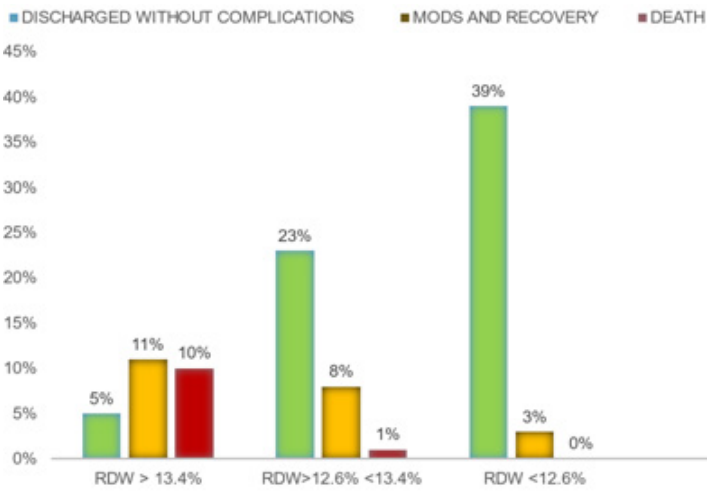
- Institutional Ethical Committee clearance obtained, structured clinical case proforma collected after obtaining consent from patients.
- Based on Hematology result , Red Cell Distribution Width was compared with clinical outcome
- Patient was followed up to discharge/death and assess whether the outcome correlate with RDW

5. Results (Including Observation)

Out of 200 patients studied

- 52 had RDW more than 13.4% among which 20 died and 22 went on multi organ dysfunction syndrome
- 84 had RDW less than 12.6 % among which 78 discharged without any complications

RDW-CV	NUMBER OF PATIENTS	DISCHARGED WITHOUT COMPLICATIONS	MODS AND RECOVERY	DEATH
GROUP A >13.4%	52 (26%)	10 (5%)	22 (11%)	20 (10%)
GROUP B >12.6%<13.4%	64 (32%)	46 (23%)	16 (8%)	2 (1%)
GROUP C < 12.6%	84 (42%)	78 (39%)	6 (3%)	NIL



6. Conclusion

- RDW is a significant prognostic marker for determining the risk of severity, complication, and mortality in AP patients.
- RDW is a convenient, economic, and sensitive monitoring method for helping clinicians predict severity, complications, and death.
- In AP patients, RDW values in combination with other scoring systems will be useful for properly evaluating the severity, mortality, and duration of hospital stay in patients of AP

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