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Exploring the Link: Red Cell Distribution Width and Prediabetes among Adults in Northern Sudan

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Introduction

The global surge in prediabetes, a precursor state to type 2 diabetes mellitus, has ignited a pressing need to unravel novel biomarkers that may shed light on the early stages of this metabolic condition. Red Cell Distribution Width (RDW), traditionally associated with anaemia, is emerging as a potential indicator of underlying physiological changes beyond its conventional scope [1]. This study embarks on an exploration of the link between RDW and prediabetes among adults in Northern Sudan. By examining the nuanced relationship between red cell distribution width and the prediabetic state, this research seeks to contribute valuable insights to the early detection and understanding of prediabetes, particularly in populations with a high diabetes burden. Diabetes Mellitus (DM; especially type 2, T2DM) is a major global public health problem. DM can lead to several complications, such as diabetic nephropathy, diabetic neuropathy, diabetic retinopathy and cardiovascular disease. According to the International Diabetes Federation (IDF), prediabetes is a term used to describe people with impaired glucose tolerance and/or impaired fasting glucose; prediabetes indicates a higher risk of developing T2DM in the near future and its related complications [2,3]. The American Diabetes Association (ADA) defined prediabetes as glycated hemoglobin (HbA1c) levels ranging from 5.7% to 6.4%. Compared to fasting blood glucose, HbA1c is commonly used since it is not influenced by a person's last meal; therefore, it is more practical, especially in rural and remote areas.

Description

The research conducts a meticulous examination of the interplay between red cell distribution width and prediabetes, drawing on a cohort of adults from Northern Sudan. Leveraging clinical data, including fasting glucose levels, glycated haemoglobin (HbA1c) and RDW measurements, the study employs statistical analyses to discern correlations and potential predictive patterns. Additionally, lifestyle factors, dietary habits and genetic predispositions are taken into account to provide a comprehensive understanding of the multifaceted determinants of prediabetes in this specific population [4]. Furthermore, the study delves into the underlying mechanisms that might explain the observed association between RDW and prediabetes. While RDW has conventionally been linked to erythrocyte disorders, recent research suggests its potential as a systemic inflammatory marker. Exploring this facet, the research investigates whether RDW serves as a surrogate marker for the low-grade inflammation associated with the early stages of prediabetes. Additionally, the study scrutinizes the impact of other potential confounding variables, including age, gender and comorbidities, to refine the specificity of the RDW-prediabetes link [5].

Conclusion

In conclusion, the exploration of the link between red cell distribution width and prediabetes in adults from Northern Sudan unfolds as a pivotal stride in early diabetes detection and risk stratification. The nuanced insights gained from this research contribute not only to the understanding of the specific relationship within this population but also offer broader implications for prediabetes detection strategies globally. The integration of RDW into the prediabetes diagnostic paradigm could potentially enhance the precision of risk assessment, allowing for targeted interventions and preventive measures. The findings underscore the importance of considering diverse biomarkers in the early detection toolkit for prediabetes, emphasizing the need for tailored approaches based on population-specific characteristics. As the global burden of diabetes continues to escalate, this research endeavours to carve a path towards more effective and nuanced strategies for identifying individuals at risk, with the ultimate goal of mitigating the progression from prediabetes to overt diabetes and its associated complications.

Acknowledgement

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Conflict of Interest

There are no conflicts of interest by author.

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