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Iron Deficiency Anaemia in CKD with Heart Failure –An Observational Study in Government General Hospital Nalgonda.

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Abstract:
Background: *Iron deficiency anaemia is the leading cause of heart failure in ckdpatients.this study was done to study the incidence of heart failure in diabetic kidney disease patients in government general hospital.*
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Materials and Methods*: This Prospective Observational study was done from August 2019 to November 2019 in Government General Hospital Nalgonda. A total of 100 cases male and female admitted for dialysis were studied based on inclusion and exclusion criteria. All patients were done routine investigations including iron studies, urine for microalbuminuria, 2decho and thoroughly elicited for history of diabetes. Patients below 12 years, pregnant women and patients with previous bleeding manifestations and heart ailments prior to onset of diabetes were excluded from the study. The study was carried out in all patients fulfilling the inclusion and exclusion criteria.*
Results*: A total of 100 patients 60 males and 40 females presented during the study period. Heart failure was more prevalent in diabetics in age group of 40-60 years.[25].>60yrs[20],20-40yrs[8].out of these DM>5YRS WERE 4 in 20-40yrs,16in 40-60yrs,18 in >60 yrs.microalbuminuria was present in 4patients in 20-40 yrs,16 patients in 40-60 yrs,18 in >60 yrs age group with abnormal renal parameters.IDA was present in 12 patients in 20-40yrs,40 patients in 40-60yrs,and 10 patients in >60yrs.*
Conclusion:*It was Observed from the study that ida was leading cause of heart failure in patients with ckd.even in those patients without prolonged dm history. anaemia was leading toheart failure withmicroalbuminuria..*
Key Word: iron deficiency,anaemia, ckd,heartfailure, microalbuminuria,

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I. Introduction

Iron deficiency is a „health-related condition in which iron availability is insufficient to meet the body's needs and which can be present with or without anaemia[1] . In chronic heart failure (CHF), iron deficiency is a recognized co-morbidity affecting 37–61% of patients[2-5]. The causes of iron deficiency in the CHF setting can be multifactorial, arising from chronic inflammation, decreased iron intake (poor nutrition and loss of appetite), decreased gastrointestinal (GI) iron absorption due to oedema, and increased GI blood loss (partially resulting from antiplatelet and anticoagulant drugs)[6,7].Exercise intolerance and fatigue are defining features of patients with CHF. Studies have shown that iron deficiency, even before the onset of anaemia, can be particularly severe in patients with CHF, aggravating the underlying disease and negatively impacting symptoms, quality of life (QoL), exercise capacity, and clinical outcomes, and has been associated which can be present with or without anaemia[‟].1Inchronicheartfailure(CHF),irondeficiencyisarecognizedco-morbiditywithanincreasedriskof mortality of 40–60%.[2-4,8-17]. In addition, iron deficiency has been shown to increase the risk of hospitalization in patients with CHF by two-fold[8]. Appropriate treatment of iron deficiency in CHFactivation and the presence of pro-inflammatory cytokines resulting in a deficient production of erythropoietin and impaired utilisation of iron, as well as malnutrition, which is common in these patients; haemodilution also contributes to anaemia.Clinical guidelines and consensus documents define iron deficiency in patients with HF based on ferritin levels has been shown to alleviate symptoms and decrease hospitalizations for heartfailure[10-15].

The 2016 European Society of Cardiology (ESC) guidelines for the diagnosis and treatment of acute and chronic heart failure recommend that all newly diagnosed patients with heart failure are tested for iron deficiency[18].

Chronic kidney disease and anaemia are common in heart failure (HF) and are associated with a worse prognosis in these patients. Iron deficiency is also common in patients with HF and increases the risk of morbidity and mortality, regardless of the presence or absence of anaemia.Anaemia is a common complication in heart failure (HF) patients and is associated with more symptoms, worse functional class, a higher rate of hospitalisation and greater mortality[19,20]. In addition, changes in anaemia status during follow-up in patientswith

HF modify the risk of mortality[21]. The presence of chronic kidneydisease (CKD) is also very common in this population, and the prevalence of HF increases as the glomerular filtration rate decreases[22].. In addition, anaemia is more prevalent in patients with HF and CKD[23].This complication is therefore emerging as a potentially modifiable and important factor in the treatment of chronic HF[19,24]. The presence of CKD or anaemia are associated with increased morbidity and mortality in HF, and the interaction of a decreased glomerular filtration rate and low haemoglobin level on mortality are additional risk factors[25]. The causes of anaemia in HF include: iron deficiency, renal dysfunction andneurohormonal<100µg/l or between 100–300µg/l with transferrin saturation <20%. It is estimated that between 30% and 50% of patients with HF have iron deficiency.26,27 Iron deficiency may cause anaemia, but it also has a direct harmful effect onmyocytes[26,27].

II. Material And Methods

This prospective observational study was carried out on patients of Department of general Medicine at Government Medical CollegeNalgonda from Aug 2019 to Nov 2019.A total of 100 patients admitted for dialysis were studied.

Study Design: Prospective observational study

Study Location: This study was done in Department of Medicine at Government General Hospital NalgondaTelangana.

Study Duration: August 2019 to November 2019.

Sample size: 100 patients.

Sample size calculation: The subjects were taken from the patients admitted for dialysis based on inclusion and exclusion criteria.

Subjects & selection method: The subjects were selected based on their iron profile and renal parameters with duration of diabetes after careful history based on inclusion and exclusion criteria.

Inclusion criteria:

1. Patients with abnormal renalparameters.
2. Either sex
3. Aged ≥ 12years,
4. DM history > 5years
5. Urine formicroalbuminuria

Exclusion criteria:

1. Pregnantwomen;
2. Patients with abnormal bleeding manifestations.
3. Patients with onset of heart ailments prior to onset ofdiabetes..
4. Patients < 12years..

Procedure methodology

All patients admitted were questioned regarding their age,h/o dm,heart ailments and were done special investigations like iron studies,urine for microalbuminuria,2d echo depending on their condition.

Statistical Analysis

Data was analyzed using SPASS software and Microsoft word and excel have been used to generate graphs,figure etc.

III. Results

Of all the patients 40[40%] were males and 60[60%] were females with female preponderence. The patients admitted with abnormal renal parameters were more in the age group 40-60 around 56[56%] followed by age group above 60 around 28[28%].out of these patients after thorough history dm>5 years were more in age group40-60[16],>60 yrs were [18],were about 4 in age group20-40yrs.out of these microalbuminuria was positive inage

group>60 years.iron deficiency anaemia was more in age groups 40-60 years[40].heart failure was more in patients with age group 40-60 yrs[25].

Table 1

Age group

In Table 1 there depictionof patientswith ckd more in age group 40-60yrs.

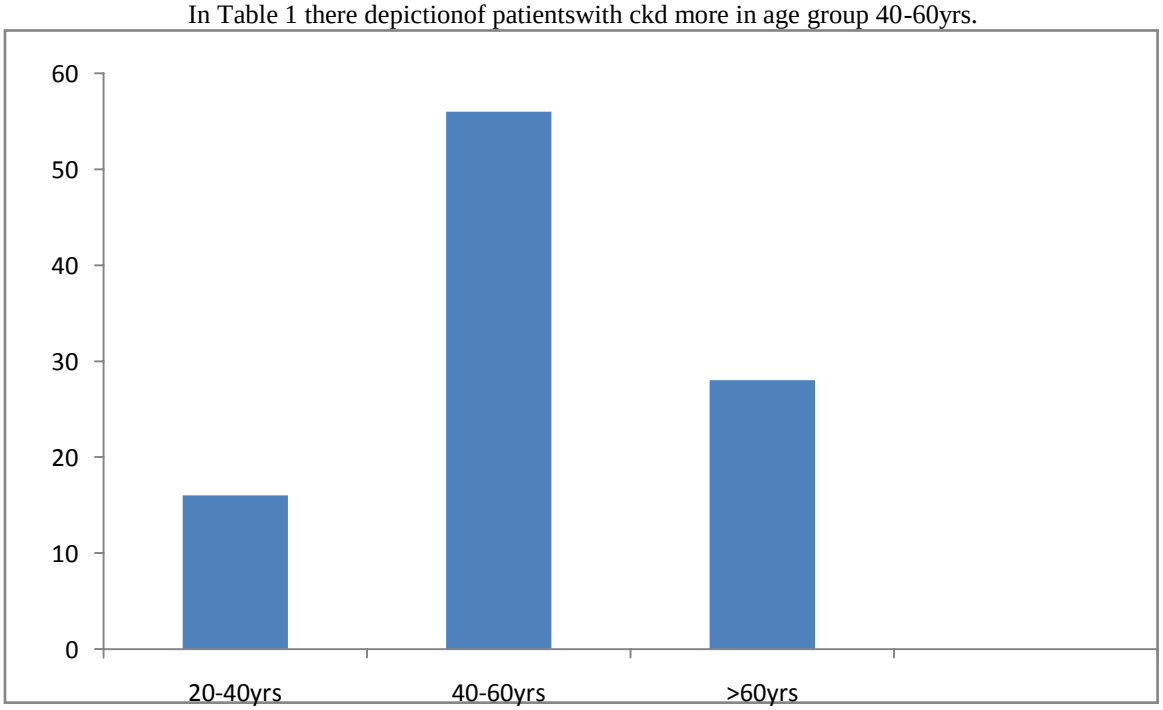


Table 2

Gender Distribution

In table 2 the patients with gender predisposition were depicted.

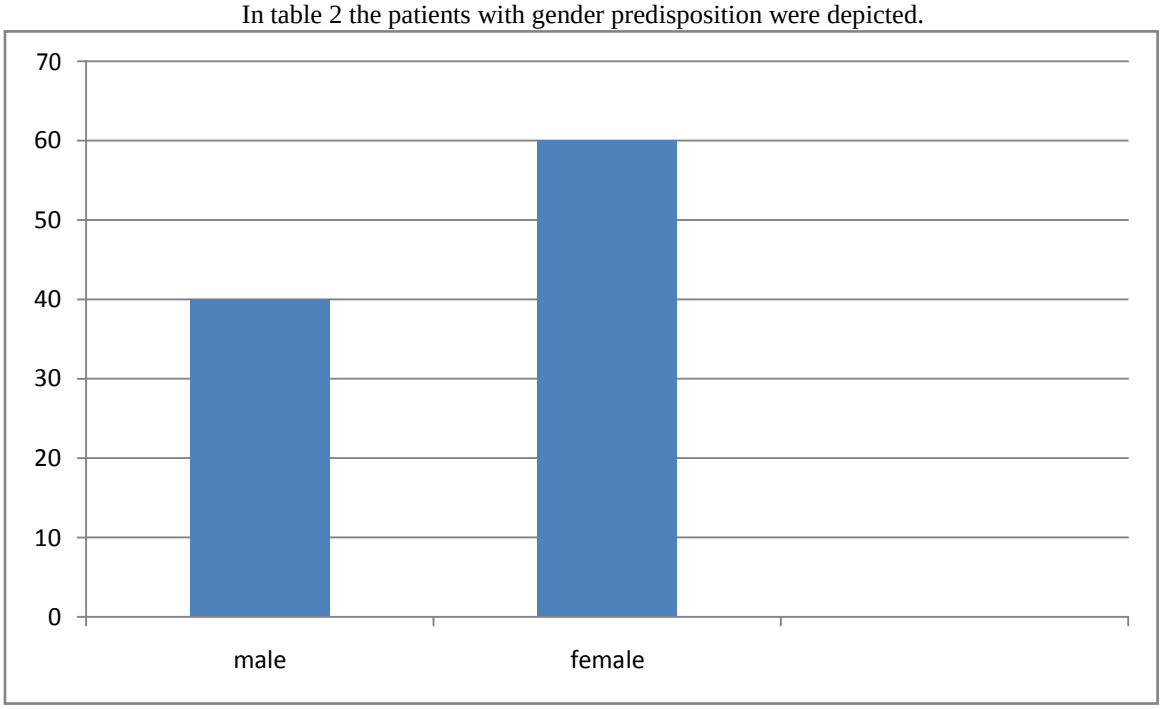


Table 3

In Table 3 the patients with DM>5YEARS were depicted..

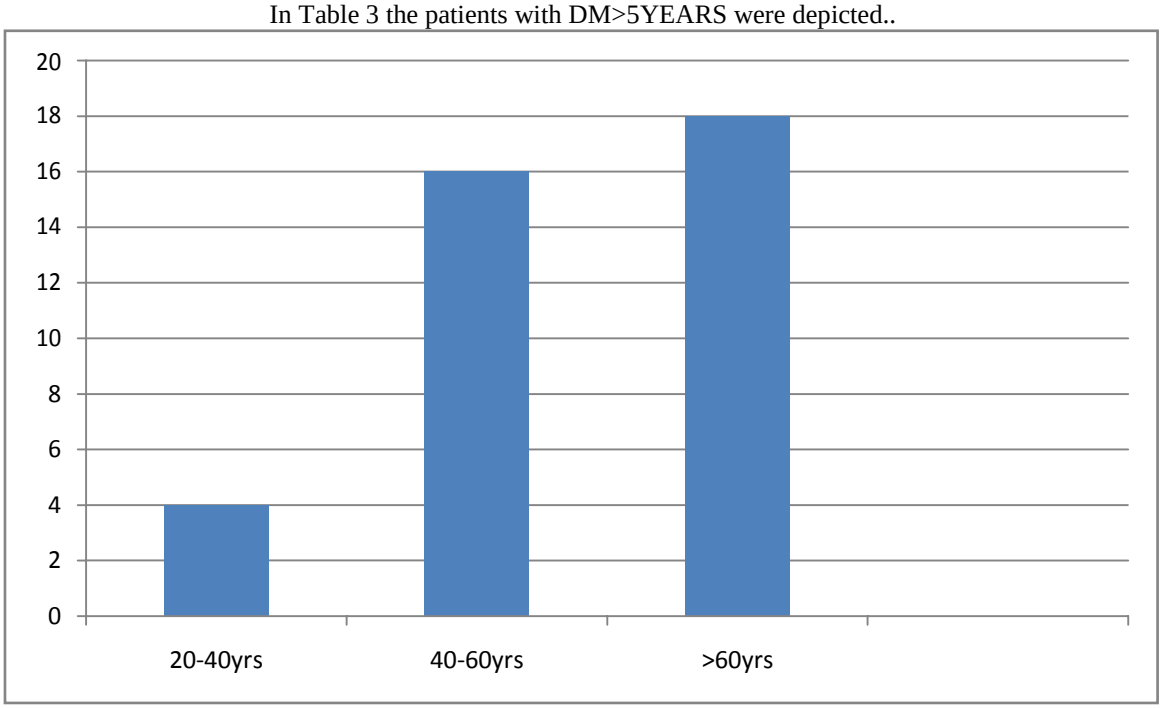


Table 4

In this table patients with microalbuminuria in ckd were depicted..

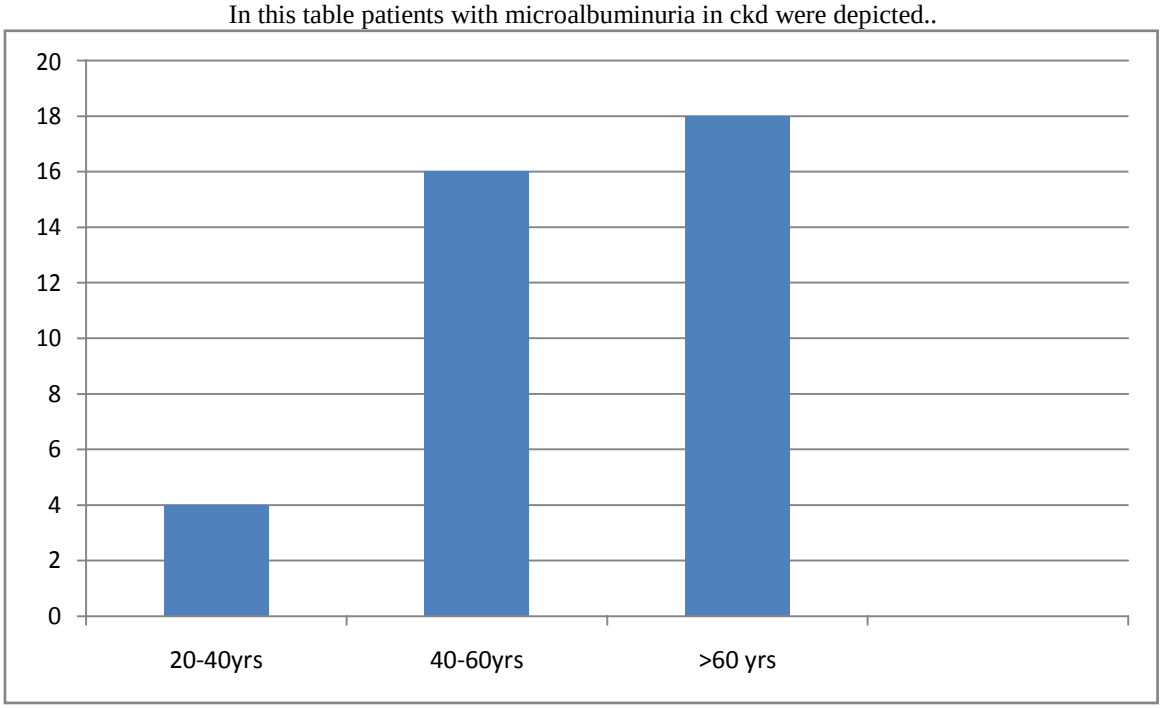


Table 5
Symptoms Distribution
In Table 5 depiction of IDA in CKD is depicted.

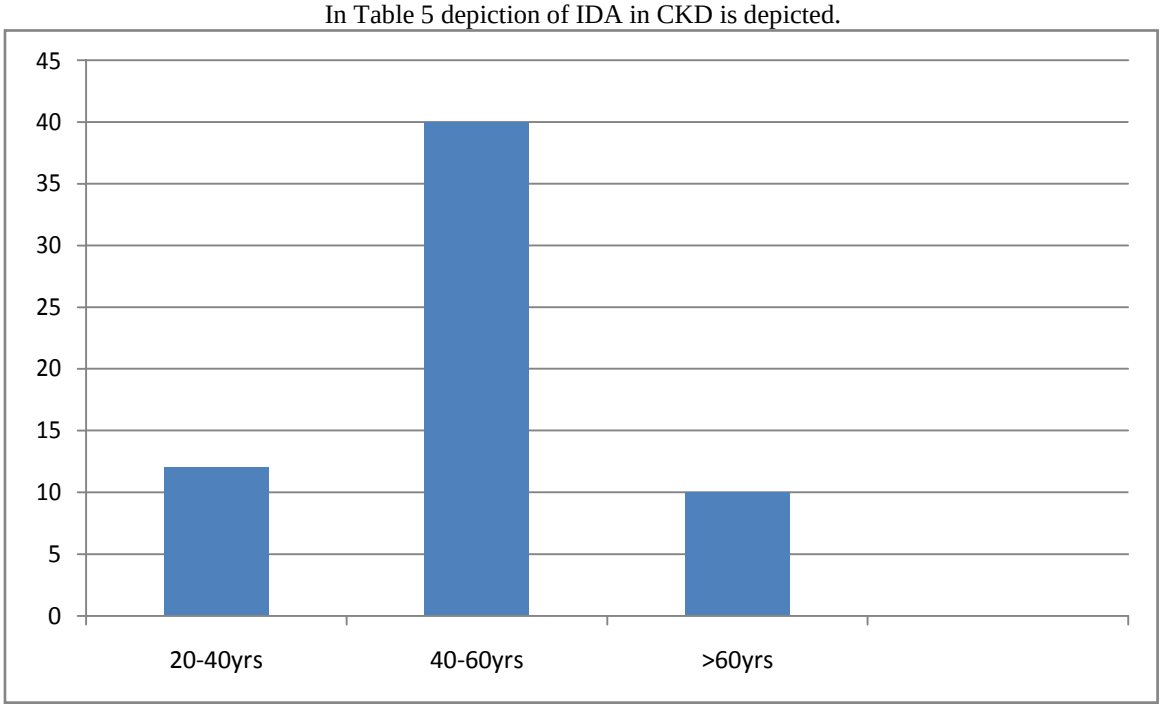
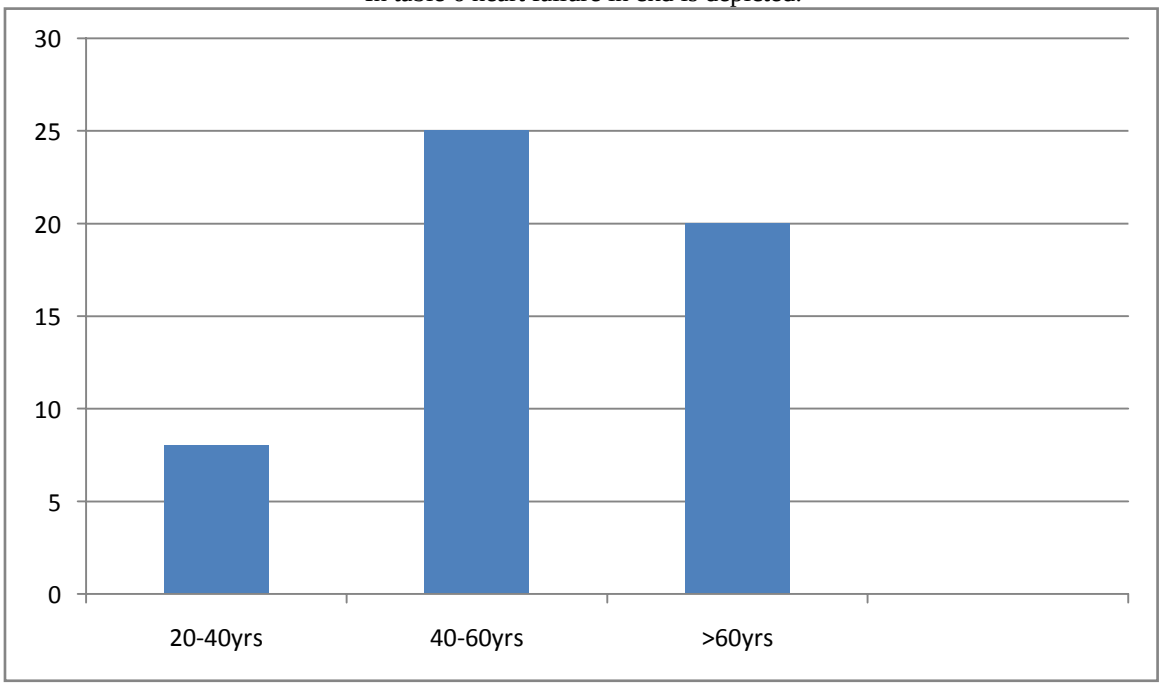


Table 6
In table 6 heart failure in ckd is depicted.



IV. Discussion

In all out of 100 cases 40[40%] were male and 60[60%] were female showing female preponderance.Among them patients with CKD were more in the age group of 40-60 yrwere56[56%].in our study we had patients with DM history>5 years were 16[2.8%] in age group 40-60yrs.out of these wehad micro-albuminuria in 16[2.8%] patients in the same age group.out of the patients studied we had 40[40%] patients in age group 40-60 yrs who had iron deficiency anaemia.we assessed the patients with iron deficiency anaemia for ferritin levels to exclude diabetes cause for heart failure.in our observation we had 25[10%] as compared to 37%

in Janskowska[28] et al study. patients with increased ferritin levels leading to heart failure signifying iron deficiency anaemia as a leading cause for heart failure.

V. Conclusion

Iron deficiency alone, even in the absence of anaemia, is a common co-morbidity in patients with CHF. If left untreated, iron deficiency can account for poor clinical outcomes. The article provides a practical example of the diagnosis and management of iron deficiency in a patient with HFrEF, demonstrating the application of the current ESC guidelines in a clinical context.Treatment with i.v. ferric carboxymaltose improves clinical symptoms (from NYHA III to NYHA I; i.e. exercise capacity and QoL) with no adverse events. Furthermore, i.v. ferric carboxymaltose could provide cost-effective savings as there was less intervention, that is, no hospitalizations or decompensations. Despite a solid evidence base and guideline recommendation, iron deficiency currently remains underdiagnosed and undertreated. The 2016 ESC guidelines for the diagnosis and treatment of acute and chronic heart failure recommend evaluating the iron status of all newly diagnosed CHF patients and consideration of i.v. ferric carboxymaltose for those patients with iron deficiency to alleviate CHF symptoms and improve exercise capacity andQoL.

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