

# Hypoalbuminemia in Patients of Systolic Heart Failure

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## ABSTRACT

**Objective:** Frequency of hypoalbuminemia in patients of systolic heart failure.

**Methodology:** The study was conducted at Liaquat University Hospital, Hyderabad/Jamshoro during 1<sup>st</sup> January 2020 to 30<sup>th</sup> September, 2020. Total 100 cases with systolic heart failure confirmed on echocardiography with reduced ejection fraction, between 30-70 years of age of either gender were included in the study. Albumin levels of the patients were recorded through hospital laboratory. After reviewing the report of albumin level, presence/absence of hypoalbumin was recorded.

**Results:** In our study, of 100 cases, 33%(n=33) of our population belonged to age range 30-50 years and 67%(n=67) between 51-70 years, mean age was 59.1±6.87 years, 61%(n=61) were male 39%(n=39) were females. Frequency of hypoalbuminemia in patients of systolic heart failure was recorded in 29%(n=29).

**Conclusion:** Hypoalbuminemia in systolic heart failure is found with a significant frequency. It is therefore important to measure albumins level in every systolic heart failure case.

**Keywords:** Systolic Heart Failure, hypoalbuminemia, association

## INTRODUCTION

Heart failure (HF) is known as a medical condition which impairs the ability of heart to pump/fill an adequate amount of blood in the due to functional/structural disorder.<sup>1</sup> The updated data in US between 2013 to 2016 reveals 6.2 million cases with heart failure.<sup>2</sup> In 2006 in our country 2.8 million cases were recorded with HF.<sup>3</sup> A recent data reveals 17.5% of the cases had CVDs.<sup>4</sup> Major contributor to HF include hypertension, ischemic heart disease (IHD), cardiomyopathy, valvular heart disease and congenital heart disease(CHD). The clinical diagnosis of HF is supported with echocardiography.<sup>1</sup>

Hypoalbuminemia is considered when the levels of serum albumin are <3.5gm/dl.<sup>5</sup> It may contribute in progression of the syndrome of HF by facilitating of myocardial and pulmonary edema, diuretic resistance, fluid retention, oxidative and inflammatory state.<sup>6</sup> Cases with HF are commonly found with hypoalbumina and raises the independent risk of mortality.<sup>7</sup> Hypoalbuminemia in HF cases may result from malnutrition, hemodilution, infection, chronic inflammation, proteinuria, and other mechanisms.<sup>8</sup> Hypoalbuminemia may result in reduction of colloid osmotic pressure and influences the degree of pulmonary congestion in addition to HF symptoms.<sup>9-12</sup>

In clinical practice, hypoalbuminemia in HF cases may face significant therapeutic consequences.<sup>8</sup> Considering the HF an emerging epidemic we planned this study calculate the occurrence of hypoalbuminemia in cases presenting with systolic heart failure.

The results will be helpful to recorded more precise frequency of the problem in our population to establish a relevant magnitude and to identify the cases having higher risk of mortality.

## METHODOLOGY

In our study, all 100 cases with systolic heart failure (any two of the typical symptoms [i.e. breathlessness, orthopnea, PND, fatigue] and typical signs [ i.e. elevated JVP(>3cm from sternal angle), pulmonary crackles, third heart sound,

displaced apex beat] confirmed on echocardiography with reduced ejection fraction [i.e. <50%]) between 30-70 years of age of either gender were included in the study. Whereas all cases with acute coronary syndrome, diastolic heart failure [i.e. with preserved ejection fraction i.e. >50% on echocardiography], Liver Cirrhosis and those with chronic kidney disease were excluded from our trial. Routine consent of the patients was obtained to include their data in this trial then clinical examination and was done to record findings. To record albumin level of the patients, a 2cc blood sample was drawn with the help of hospital paramedic staff and sent to the hospital laboratory. After reviewing the report of albumin level, presence/absence of hypoalbumin was recorded. We used routine statistical programe i.e. SPSS-19<sup>th</sup> version for data analysis. For age and serum albumin level, we recorded mean and standard deviation whereas frequency/percentage was calculated to record gender and presence/absence of hypoalbuminemia.

## RESULTS

The data reveals that 33%(n=33) of our population belong to age range 30-50 years and 67%(n=67) between 51-70 years, mean age was 59.11±6.87 years. (Table No. 1) 61%(n=61) were male 39%(n=39) were females. (Table No. 2) Frequency of hypoalbuminemia in patients of systolic heart failure was recorded in 29%(n=29) while 71%(n=71) had had no hypoalbuminemia. (Table No. 3)

Table 1: Age Distribution (n=100)

Age(in years)	No. of patients	%
30-50	33	33
51-70	67	67
Total	100	100
Mean±SD	57.41±5.54	

Table 2: Gender Distribution (n=100)

Gender	No. of patients	%
Male	61	61
Female	39	39
Total	100	100

Table 3: Frequency of Hypoalbuminemia in Patients of Systolic Heart Failure (n=100)

Hypoalbuminemia	No. of patients	%
Yes	29	29
No	71	71
Total	100	100

## DISCUSSION

The findings of our study are comparable with a study by Liu M et al who enrolled 576 consecutive heart failure cases with preserved ejection fraction, they recorded 28% of the cases with hypoalbuminemia at the time of admission.<sup>13</sup> Another study by Uthamalingam S and co-workers reviewed 438 cases with heart failure and found 54% of the cases with hypoalbuminemia.<sup>14</sup> These findings are not consistent with our results. However, Bonilla-Palomas JL et al found these findings in 29.8% of the cases these are also near to our results,<sup>15</sup>

Some other studies recorded a significant correlation of higher sensitivity of C-reactive protein to lower levels of albumin indicating the underline etiology of the morbidity in heart failure cases.<sup>16-17</sup>

Stephane Arques and colleagues<sup>18</sup> are of the view that lower levels of albumin provide prognostic information in addition to biochemical and clinical variables in heart failure cases regardless of clinical presentation.

Another recent study<sup>19</sup> revealed hypoalbuminemia as frequent finding of early in cardiogenic shock. Further, it was recommended that measurement of plasma albumin should be evaluated at initial level in cardiogenic shock cases.

A recent study by Ashaduzzaman Talukder and others<sup>20</sup> explains that the outcome of heart failure cases is improved in cases attaining albumin level 3g/dl. However, it can be concluded that infusion of albumin improves both objective and subjective improvement of heart failure cases.

Finally, our study is helpful and reflecting magnitude of the morbidity in Pakistani population, however, being the primary study, we need some other trials to validate our findings.

## CONCLUSION

Hypoalbuminemia in systolic heart failure is found with a significant frequency, hence every heart failure case should be evaluated for albumin levels.

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