



# **Impact Of High Flow Arteriovenous Fistula In Chronic Hemodialysis Patients On Cardiac Functions**

Thesis submitted for partial fulfillment of the Master  
degree in Internal Medicine

By

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# Summary

Vascular access for hemodialysis (HD) with an inappropriately high flow may underlie the onset of high output heart failure (HOHF). This was a cross-sectional study carried out on patients who receive regular hemodialysis for at least 3 months through AVF in Fayoum University Hospital Dialysis Unit.

The aim of this study was to determine the prevalence of high flow access (HFA) in chronic HD patients, and to determine its impact on cardiac functions and structures.

During the period of this study, starting from January 2023 to July 2023, 59 patients met the inclusion criteria. The study cohort was subdivided into 2 groups based on AVF flow:

**Group I:** 43 patients (non-HFA group with  $Q_a < 2000$  ml/min), and

**Group II:** 16 patients (HFA group with  $Q_a > 2000$  ml/min).

AVF flow ( $Q_a$ ) was assessed using Color Doppler ultrasonography. Transthoracic echocardiography was performed for all patients.

Prevalence of HFA among study population was 27%. Mean AVF Qa was  $1039.5 \pm 209.5$  and  $5560.5 \pm 3184.1$  ml/min, for group I and II respectively.

No statistically significant difference between two study groups as regarding age , gender or regards co-morbidities such as DM or HTN.

Also, there was no statistically significant difference between two study groups as regards clinical history of hemodialysis such as duration of hemodialysis, duration of AVF, history of previous access or blood transfusion.

Data from our study had demonstrated that HFA can affect both systolic and diastolic functions of the heart.

There was a statistically significant difference in systolic function. HFA group of patients exhibited a significantly lower ejection fraction with a mean value of  $56.3\% \pm 11.4\%$  as compared to  $64.4\% \pm 3.6\%$  for the non-HFA group.

As regards LVES diameter it was increased in Group II with mean value 3.2 cm and 2.9 cm respectively but not reached significant difference.

Diastolic function also was affected by HFA, our study showed that there was a statistical significance difference in

diastolic function measures with higher measures of LA diameter in Group II compared to Group I.

Diastolic dysfunction assessed by E/A ratio showed significant statistical difference between the 2 groups with mean value of diastolic dysfunction grades 1.4 for Group II and 0.58 for Group I.

LVED diameter was increased in Group II compared to Group I with mean value 4.8 cm and 4.5 cm respectively but not reached significant difference.

Our data showed significantly higher PASP with a mean value of 44.3% for HFA group of patients as compared to 27.1% for the non-HFA group.

So based on the study results HFA was associated with a significant effect on both systolic and diastolic functions of heart.