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FISTULA FIRST INITIATIVE;

INCIDENCE AND BARRIERS IN FOLLOWING THE PROTOCOL FOR AV FISTULA FOR DIALYSIS.

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ABSTRACT… Background: Although AV fistula is considered as a gold standard for initiating hemodialysis in patients with ESRD, the incidence is quite low in our population. **Aim:** The aim of this study is to find out the incidence of permanent AV access i.e. AV fistula at the time of first dialysis and causes leading to failure of this protocol. **Study Design:** Cross-sectional study. **Setting:** Hemodialysis unit of Lahore General Hospital. **Period:** August-September, 2017. **Method:** Patients undergoing hemodialysis in dialysis center of Lahore General Hospital. **Results:** Out of 82 patients recruited, only 4 patients were found to have their first hemodialysis with AV fistula, remaining 78 patients had temporary double lumen catheter for emergency hemodialysis who were later on counselled to have AV fistula. Reasons include lack of counselling/awareness/education of disease in patients 71.79%, emergency HD in patients with hypertensive emergencies 14.1%, and delay in maturation (7.6%) and failure (6.4%) of AV fistula. **Conclusion:** To increase the incidence of fistula first initiative integration of different professional teams are required as well as education and awareness should be instilled in patients to help them in taking decisions.

Key words: Arteriovenous Access, Fistula First Initiative, Hemodialysis.

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INTRODUCTION

Dialysis treatment and kidney transplants are necessary to maintain life when kidney functions drop to 10-15%. Dialysis are of two types i) Peritoneal dialysis ii) Hemodialysis. In hemodialysis blood is removed from the body and passed through a dialyzer. In dialyzer blood is cleansed of toxins such as urea, creatinine and potassium while larger molecules and proteins are retained. This process of filtering blood takes 3-5 hours at least 2-3 times a week. A well-functioning vascular access with least complication is the foundation of successful hemodialysis.[1] There are three types of access i) Central venous catheter (CVC) ii) AV graft iii) Native AV fistula. The National Kidney Foundation (NKF), Center for Medicare and Medicaid Services (CMS) and other experts generally agree that fistulas are the best type of vascular access. Due to lowest rate of complications fistula is considered as a Gold standard of vascular access. The Center of Medicare and Medicaid and members of renal community have come together to start a "fistula first" initiative in which not only people who are going to have their first hemodialysis should have fistula first but people with other access are also good candidates.[2]

The prevalence of fistulas among hemodialysis patients reflects national, regional, economical and local practices as well as patient specific demographic and clinical factors. Whether patient starts his first hemodialysis with fistula depends upon time of referral for dialysis and vascular access, type of fistula placed, time required for fistula to mature, nephrologists, surgeon, nursing and patient specific factors.[3]

OBJECTIVE

In our study we tried to assess the number of patients who had undergone there first hemodialysis with AV fistula, and the causes which caused hindrances in patients taking fistula initiative.

METHOD

A total of 82 patients of end stage renal disease

on maintenance hemodialysis were recruited in this cross-sectional survey, from hemodialysis unit of Lahore General Hospital during the month of August-September, 2017.

RESULTS

A total of 82 patients undergoing hemodialysis were studied; out of these 44 (53.7%) were males and 38 (46.3%) were females. All of these patients were diagnosed with end stage renal disease with different etiologies; the most common was diabetes (52.4%). Others included hypertension (37.8%), chronic interstitial nephritis (4.9%) and chronic glomerulonephritis (2.4%). Obstructive uropathy was also found to be an important cause in 2.4% of studied population.

Out of these 82 patients, 70 patients (85.4%) were undergoing hemodialysis twice per week and 12 patients (14.6%) were on thrice per week hemodialysis. The type of AV access in subjects under study in current dialysis sessions and at the time of their first hemodialysis, causes of low incidence in fistula first initiative and correlation with gender are as follows.

Type Access for Hemodialysis	Frequency	Percentage
AV fistula	74	90.2%
Permanent double lumen catheter	5	6.09%
Temporary double lumen catheter	2	2.4%
AV graft	1	1.21%

Table-I. Frequency and type of access in patients on maintenance hemodialysis

Type of AV Access on First Hemodialysis	Frequency	Percentage
Temporary double lumen catheter	78	95.1%
AV fistula	4	4.8%

Table-II. Type of AV access on first hemodialysis

Causes leading to low incidence of fistula first initiative	Fre-quency	Percen-tage
Lack of counseling/awareness/ education about the disease and procedure of HD.	56	71.79%
Emergency dialysis	11	14.1%
AV fistula failure.	6	7.6%
Delay in fistula maturation.	5	6.41%

Table-III. Causes leading to incidence of fistula first initiative

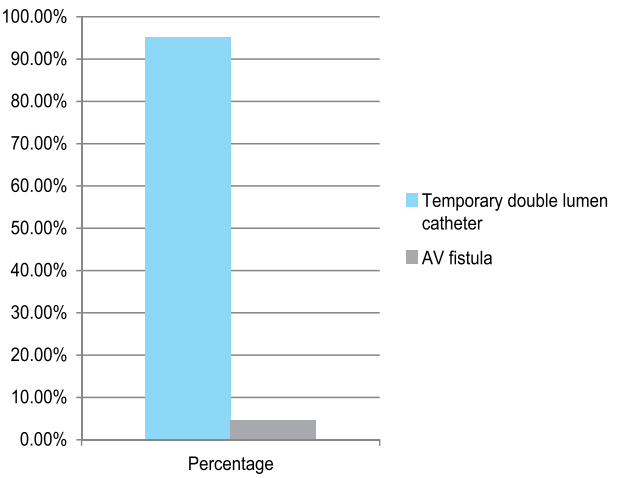

Figure-1

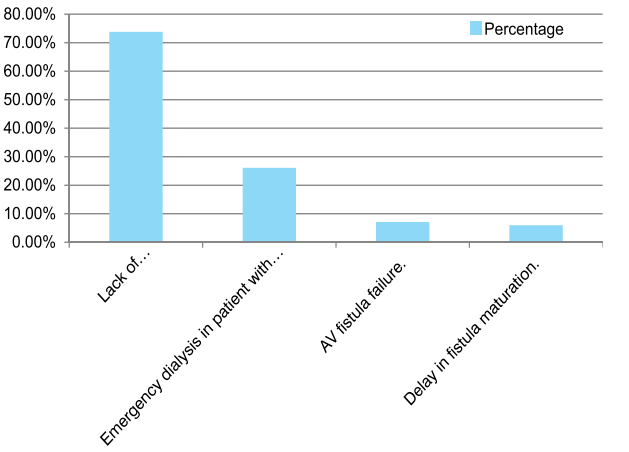

Figure-2

Causes leading to low incidence of fistula first initiative	Gender		Total
	Female	Male	
Lack of counseling/ awareness/education about the disease	31	25	56
	55.4%	44.6%	100%
Emergency hemodialysis	3	8	11
	27.27%	72.70%	100%
AV fistula failure	2	4	6
	40%	60%	100%
Delay in maturation of fistula	2	3	5
	40%	60%	100%

Table-IV. Correlation between age groups and barriers in fistula first initiative:

Causes leading to low incidence of fistula first initiative	Age Groups			Total
	11-25	25-50	>50	
Lack of counseling/awareness/education about the disease	5	30	21	56
	8.90%	53.57%	37.50%	100%
Emergency hemodialysis	6	5	0	11
	54.54%	45.45%	0	100%
AV fistula failure	0	1	0	1
	0	100%	0	100%
Delay in maturation of AV fistula	1	1	1	3
	33.30%	33.30%	33.30%	100%
Total	12	37	22	71
	16.90%	52.10%	31.00%	100%

Table-V

DISCUSSION

One of the major causes of failure of hemodialysis is lack of proper arteriovenous access. With the introduction of fistula in last two decades and progress in prosthetic arteriovenous graft and central venous catheter physicians have the ability to choose the best vascular access for a particular patient keeping in view his requirements. However native arteriovenous fistula remains the first choice in vascular access due to low incidence of infections and thrombotic complications despite emerging vascular graft technologies and permanent cuffed catheters. For this guidelines from different countries strongly recommend AV fistula use.[4,5] Arteriovenous fistula needs to be planned 1-2 months before the start of first hemodialysis which is the time required for the fistula to mature. A proper maintenance of flow chart is required in pre-operative, an operative and post-operative phase. In the pre-operative phase first of all timely diagnosis and proper counseling is required after that after that medical history physical evaluation and instrumental evaluation is done. Dominant limb of that particular person is identified to avoid limitations in patient's daily life.[1,6]

The gold standard to decide on the type and location of the vascular access is duplex ultrasound scan which helps in knowing the arterial and venous diameters. A vein diameter of >2mm and arterial diameter of >1.6mm. These factors tell about the maturation of AV fistula.[7] According to the guidelines of the National Kidney Foundation (NKF-K/DOQI)[7], the site order for the surgical intervention of AVF for HD is the following: forearm (radio–cephalic or distal AVF), elbow (brachio–cephalic or proximal AVF), and arm (brachial–basilic AVF with transposition or proximal AVF). After the formation of fistula proper care should be given to help it mature, strengthen and avoiding complications. Care instructions include exercise of the arm, cleaning of area, and adequate blood flow by avoiding tight fitting clothes and checking your fistula blood flow by touch (thrill) and sound (bruit).

In our study of 82 patients on hemodialysis, 74(90.2%) were having their dialysis from arteriovenous fistula, 5(6.09%) had permanent double lumen catheter and 2(2.4%) had temporary double lumen catheter, 1(1.01%) had AV graft.

Although AV fistula is considered to be the first choice and gold started to start hemodialysis of a patient, the frequency of subjects taking this initiative is very low in our study. Only 4 patients out of 82 under observation started their dialysis with fistula and remaining 78 patients had their first dialysis with temporary double lumen catheter. The incidence of fistula first initiative is 4.8% There are number of reasons leading to this low incidence which include late referral to nephrologists, inadequate patient's education, inadequate communication among patients, nephrologists, surgeon, radiologists and dialysis staff, selection of appropriate vessel, inadequately trained surgeons and AV fistula non maturation and failure.[8]

In our hemodialysis center factors leading to decrease incidence of arteriovenous fistula

includes lack of counseling/education/awareness of the disease in 56 patients' i.e. 71.79% of the patients. This contains all the factors including late presentation of patients, late referral to the surgeon from nephrologists behalf, patient's lack of awareness of the extent and gravity of the situation, patients becoming scared of the procedure and thus ignoring the advise completely and depending local quacks leading to further complications and decline in renal functions. When these patients present to the emergency with ejection fraction less than 30 they are advised emergency dialysis with temporary double lumen catheter, and afterwards counseling is done for AV fistula which is made afterwards.

Second main factor include emergency hemodialysis in patients with end stage renal disease or acute on chronic kidney disease. Patients with malignant hypertension develop a markedly increase risk of ESRD.[9] This was evident in our study where 14.1% of the patients of acute or chronic kidney disease who presented in emergencies with renal failure and and associated complications underwent emergency hemodialysis. Among these patients most didn't have previous knowledge of their hypertension and were not taking any medication for it.

AV fistula failure is another cause. 7.6% of the patients have their fistula made before dialysis but it failed to work at the time of first dialysis. The main cause of failure in mature AV fistula is stenotic lesion which leads to decrease in flow and failure of fistula to work.[10]

Delay in maturation of fistula from standard time of 1-2 months is another factor accounts for 6.41% of our patients. The fistula which fails early either never matured or fails in first 3 months of initial dialysis. Main factors required for a fistula to mature are adequate blood flow and enough size to allow repeated cannulation. Main factors leading to immature fistula at the time of first dialysis are arterial, venous and presence of accessory vein.[11]

Further it was found that out of 82 patients 44(53.7%) were male and 38(46.3%) were female. Among these all 4 patients who started their dialysis with fistula were males. Out of remaining 78 patients the number of female who didn't get their first dialysis with fistula because of lack of counseling/awareness and education ware 32 out of total 56, which is more than number of males i.e. 24. Emergency dialysis in patients suffering from hypertensive emergencies was more in males 8 out of 11. AV fistula maturation delay and failure rate is almost same in both genders.

CONCLUSION

Increasing AV fistula use in hemodialysis patients and starting their dialysis according to fistula first rule is extraordinary complex. A multidisciplinary team is required comprising of nephrologists, radiologists, surgeons and dialysis staff. Public health and awareness programs are required to decrease the apprehensions of uneducated and less privileged class to deal with major factors leading to low incidence. Nephrologists should asses the circumstances of their local centers and work out strategies to streamline the process.

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Don't decrease the goal.
Increase the effort.

– Unknown –

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Tanveer Fatima	Data collection and article writing.	
2	Sania Ashraf	Data collection and article writing.	
3	Aurangzeb Afzal	Review of article.	