

Challenges of Hemodialysis in India.

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Abstract: Hemodialysis in India has improved by leaps over the last two decades. However there is a long way to go. There is still late diagnosis, late referral of kidney patients and issues remain of accessibility to hemodialysis centres along with finances. Intensive public, patient and primary care physician education, government backing and induction of more trained personnel will make hemodialysis a successful RRT modality in India.

INTRODUCTION

The first hemodialysis in India was performed in 1961.¹ 50 years later there are more than 800 centres in the country providing hemodialysis. However the number of patients / pmp on maintenance hemodialysis in India is far less than in the developed nations, and even countries in south-east Asia. Of the 1.5 lakh patients developing endstage renal disease (ESRD) every year, only 10% get to see a nephrologist. The outcome of even this group which gets access to specialised care is dismal. In a study of ESRD patients at a tertiary government hospital, the median survival of the cohort was only 70 days, and almost half of the patients were lost to follow-up.² In this brief review we will discuss the various issues which confront both the nephrologists and the patients.

LATE DIAGNOSIS AND ACCESS ISSUES

Late diagnosis of renal failure is a worldwide phenomenon, more so in the developing countries like India. Early referral is important both for optimum treatment of CKD so that the progression can be maximally retarded; and also preparation of the patient for renal replacement therapy including vaccinations and access creation well in time. More than 65% of patients of chronic kidney disease (CKD) present as end-stage renal disease (ESRD) to a nephrologist in India, requiring emergency hemodialysis.³ The problem of late diagnosis and referral to a nephrologist can only be solved when family physicians and internists are sensitised appropriately, and also actively involved in management of CKD.⁴

In the NIMS study only 30% had arterio-venous fistula (AVF) at presentation.² This is the experience of most centres in the country. As a result patients need insertion of temporary vascular access involving catheterization of femoral or internal jugular veins. These procedures are associated with significant immediate and late complications. The insertion should preferably be done in an interventional suite with ultrasound and fluoroscopic facilities, but this may not be available at all centres. Repeated femoral vein punctures can lead to hematoma at the groin, thrombosis of the femoral vein leading to lower limb edema, and sometimes even pseudoaneurysm of the femoral vein (Figure 1). Following placement of double lumen catheters, the subclavian vein is particularly prone to the development of thrombosis and / or stenosis (Figure 2). In fact this practice is now prohibited. But it is not uncommon to see patients sent from small centres in the periphery with double lumen subclavian catheters in situ even now. Surprisingly recently we have had a spate of patients with thrombosis of the internal jugular vein following placement of double-lumen HD catheters (Figure 3). Catheter related bacteremia (CRB) is also very common. K/DOQI guidelines suggest that incidence of CRB should be less than 10% at 3 months.⁵ A better alternative is the placement of soft tunneled catheters at the outset, a practice which is now catching up.

In diabetics comprehensive arterial and venous mapping by Doppler should be done to reduce the incidence of primary AVF failures. This requires the availability of costly equipment and trained radiologist. Very often it is not possible to create a successfully functioning Brescia-Cimino radiocephalic autogenous AVF in the forearm. Proximal AVF then needs to be done.⁶ Although they are usually surgically successful, they often do not mature adequately to enable cannulation for HD. Cellulitis of the arm following repeated punctures is another complication precluding use of the AVF (Figure 4). Poor distal blood supply leading to steal syndrome of the digits may also happen with these fistulae. The other alternative is placement of polytetrafluoroethylene AV grafts. In the West this is commonly done. However there are few centres providing this facility in India. Of course they too have their own share of problems.



Figure 1: Pseudoaneurysm of the right femoral artery with gangrenous changes, and subcutaneous hematoma over the left femoral artery



Figure 2: Stenosis of the left subclavian vein with breast engorgement



Figure 3: Thrombosis of the right internal jugular vein



Figure 4: Cellulitis of the left arm following use of the proximal AVF

SHORTAGE OF SKILLED MANPOWER

For a country of 1.2 billion, there are only about 1000 trained nephrologists. This is obviously way short of the numbers actually needed. Besides, there is immense shortage of skilled dialysis technicians / nurses in the country. Till recently there was no recognized course of for training this cadre. To overcome this problem, the Govt of India is starting courses specifically to train them.

INACCESSIBILITY OF HEMODIALYSIS CENTER

India is a vast country. More than 70% of the population lives in villages. Hemodialysis centres are present only in the cities and large towns. Until recently several district headquarters did not have HD facilities. Hence it is logistically difficult for the vast majority of dialysis patients to undergo regular maintenance hemodialysis (MHD) on a long term basis.

ECONOMICS OF HEMODIALYSIS

The number of patients on renal replacement therapy (RRT) in general, and hemodialysis in particular reflects the socioeconomic condition of the country. 26% of the 1.2 billion population subsists below the poverty line, where the daily earning is ₹ 10. The government spends barely ₹ 400 per capita on health. The priorities are on infectious diseases, sanitation and nutrition. Maintenance hemodialysis is not provided in government hospitals. Insurance covers a tiny fraction of the population. Most patients are self-paying. The monthly cost of HD in most private hospitals is about ₹ 12000, added to which is the cost of medications.⁷ This amount is beyond the reach of the vast majority. In cases where the patient lives far away from the dialysis centre it entails further expenses of travel and wages lost for the day. In the NIMS study at the end of the follow-up period the number of self-paying patients had dwindled significantly. Hence underdialysis with all its attendant complications is the norm. While the science of hemodialysis dictates stringent adequacy measures with mounting evidence of the advantages of daily dialysis, many patients survive on the edge by taking dialysis once a week. Few years back the concept of stand-alone HD units on public-private partnership was conceived to provide cheaper dialysis. Such units are gradually becoming functional all over the country. The involvement of philanthropists and non-governmental organizations in the setting up of charitable dialysis units has also helped in providing affordable dialysis to needy patients.⁷ These stand-alone dialysis units need to be associated with a proper hospital, so that if needed unstable patients can be shifted for admission.

MALNUTRITION

Given the economics and logistics of hemodialysis, it is not surprising that malnutrition is very common in MHD patients. In a study from South India, 91% of the patients were moderately malnourished.⁸ The role of renal dieticians is of great importance to remedy this condition.⁹ Unfortunately there is a dearth of committed renal dieticians in the country. It is well known that malnutrition is usually associated with the Malnutrition-Inflammation-Atherosclerosis Syndrome, which leads to an overall poor outcome due to sepsis and cardiovascular mortality.

HEPATITIS SEROCONVERSION DURING MHD

Acquiring Hepatitis B and or C infection while on dialysis is another major problem in the country. Availability of reasonably effective vaccination against hepatitis B has helped to reduce the conversion rate. However the scenario is dismal with regard to hepatitis C. There is no vaccination to prevent hepatitis C, and the spread of the virus is both blood-borne and nosocomial. The prevalence is widely variable, from <5% to 75%.¹⁰⁻¹¹ The prevalence is consistently associated with the number of transfusions, and more importantly the duration of MHD. A study by Jasuja et al from a tertiary care hospital in Delhi showed that almost half the patients with duration of dialysis more than 16 months were HCV RNA positive.¹² The CDC guidelines do not recommend isolation of hepatitis C positive cases during dialysis, provided universal precautions (UP) are meticulously adhered to. Implementation of UP requires knowledge about it, commitment to adhere to it and additional costs. A study at our centre showed that though all the nurses were aware about them, only 70% followed them in day-to-day practice.¹³ Hence it is our opinion that if a unit is to contain HCV infection, then they must isolate HCV-positive patients ie. the 'no-isolation' policy should not be generalized.¹⁴

CONCLUSION

Hemodialysis in India has improved by leaps over the last two decades. However there is a long way to go. Intensive public, patient and primary care physician education, government backing and induction of more trained personnel will make hemodialysis a successful RRT modality in India.

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