Short Communication

Prediction of arteriovenous fistula failure among chronic kidney disease patients in tertiary care hospital.

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ABSTRACT: In dialysis vascular access plays an essential role in delivering adequate dialysis dose to the patient. Non-invasive techniques are used for assessing AVFs (Arteriovenous Fistula) and AVGs (Arteriovenous Graft). Vascular access dysfunction occurs in hemodialysis patients. The regular evaluation of patients with HD (Hemodialysis) access is assessed by physical examination .Vascular access surveillance has been defined as regular evaluation of the access for dysfunction using more technical methods.

INTRODUCTION

Characteristics of an Ideal Vascular Access:

- High blood flow rates
- Instant usability
- Long survival
- Low thrombosis rates
- Low infection rates
- Patient comfort
- Minimal cosmetic effect

Methods for Vascular Access Monitoring:

- Flow measurement
- Clinical monitoring
- Ultrasound dilution
- Doppler ultrasound
- Others
- Pressure based
- Static intra access pressure
- Direct intra access measurement
- Indirect measurement via dialysis machine
- Dynamic pressure
- Structure based
- Colour flow Doppler
- Angiography

Review of literature:

An AVF is formed by subcutaneous anastomosis of an artery to an adjacent native vein, allowing flow directly from the artery to the vein. Traditionally the anastomosis is made at the wrist between the radial artery and the cephalic vein or at the elbow or upper arm. An AVF cannot be used immediately. One should wait approximately 6 weeks for the feeding artery add vein to dilate.

AVF is the preferred form of access in view of superior patency rates and fewer complications compared with AVG and catheters. According to KDOQI guidelines AVF maturation is considered clinically successful if 6 weeks after the fistula surgery the fistula supports a flow of 600ml/min, is located at a maximum of 6mm in depth. AVF has a high risk of primary failure resulting from early thrombosis and maturation failure.

Primary fistula failure: Immediately AVF is failing within 72 hours of surgery, early dialysis suitability failure, or late dialysis suitability failure (NAVAC definition)

As fistula failure is the common problem faced by most of the maintenance hemodialysis patients, this study is planned.

Materials and Method

Study Design:

The present study was carried out in patients' undergone AVF surgery in Kasturba Hospital, Manipal. This was a prospective single center study, conducted from 1st November 2015 to 31st January 2016.

Methodology:

- Personal interview
- Checking doppler
- Check AV Fistula thrill
- Check the bruit with a stethoscope placed over the fistula

Inclusion Criteria:

- All patients undergoing AVF surgery in KH Manipal from 1st November 2015 to 31st January 2016.

Exclusion Criteria:

- Patient with AVG.
- Patients with hemodialysis vascular catheters.
- Pediatric patients.

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Outcome measures:

- Rate of primary fistula failure.
- Rate of secondary fistula failure.

Statistical analysis:

- Observational Model: Prospective study
- Entry type: Microsoft excel.
- All data are entered in excel sheet.
- The data was analyzed using Statistical Package for the Social Sciences (SPSS).
- Sample size: 51

Result:

Among 51 AVF created 35 were brachiocephalic, 12 radiocephalic and 4 brachiobasilic fistulas.In our center most of the fistula surgeries were done in the upper arm that is brachiocephalic. In this study the primary fistula failure rates were more in brachiocephalic fistulas that is 5 out of 35 got failed. In radiocephalic fistula 1 of 12 had primary AVF failure and in brachiobasilic fistula no primary fistula failures were noted.

Conclusion:

Arteriovenous fistula is the ideal vascular access for CKD patients. During the course of this study, it is noted that more brachiocephalic AVFs were created than radiocephalic or brachiobasilic fistulas. In our centre the rate of primary failure is found to be very low.

The incidence of the primary arteriovenous fistula failure in CKD patients in our centre (KMC Manipal) was found to be 11.7%. Here it is also seen that the mean venous diameters were smaller in patients who had primary AVF failure.In this study the doppler parameters did not predict the AVF failure rates and also no secondary AVF failures were noted.

The preservation of the upper limb vessels is very important for the success of this procedure.

REFERENCES

1. Handbook of Dialysis (Lippincott Williams and Wilkins Handbook Series) Paperback – Import, 1 Dec 2006 by John T. Daugirdas (Editor), Peter G. Blake (Editor), Todd S. Ing (Editor)
2. Patency rates of the arteriovenous fistula for hemodialysis: a systematic review and meta-analysis
3. AA Al-Jaishi,MJ Oliver, SM Thomas, CE Lok... - American Journal of ..., 2014 – Elsevier
4. NKF-K/DOQI clinical practice guidelines for vascular access: update 2000. Am J Kidney Dis 2001;37(suppl):S137-81
5. Allen R.N Nissemon, Richard N "Hand book of dialysis therapy" 4th edition 2007
6. Nissenson, Fine "Dialysis therapy "3rd edition 2001
7. Jonathan Himmelfarb, Mohamed H. Sayegh "Chronic Kidney disease, dialysis and transplantation"3rd edition 2010.
8. Zinchenko VA. Agroecotoxicological bases of pesticides applying. Moscow: MSHA. 2000;180.
9. Hygienic standards of pesticides content in objects of environment (list). GN 1.2.3111-13. (with changes for July 13, 2016). Informational and publishing center of the State Committee on Sanitary and Epidemiology Surveillance of Russia (2013). 113.
10. The list of pesticides and agrochemicals resolved in the territory of the Russian Federation. Moscow, Protection and Quarantine of Plants. 2017;792.
11. Pesticides. 2018.
12. Allagui A, Bahrouni H, Sadak Y, et al. Deposition of pesticide to the soil and plant retention during crop spraying. Art St J Agri Sci. 2018;10:104-15.
13. Shaon KD, Irani M, Aniruddha R, et al. Flubendiamide as new generation insecticide in plant toxicology: a policy paper. Adva Clin Toxicol. 2015;2:1-10.
14. Shrinivas SJ, David M. Biodegradation of flubendiamide by a newly isolated Chryseobacterium sp. Strain. Biotech. 2016;6(1):31.