

Association of Dry Mouth and Thirst with Intradialytic Weight Gain in Hemodialysis Patients

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Abstract:- The Thirst & Dry mouth are the two major causative agents for high IDWG in dialysis patients a high IDWG can cause complications during dialysis such as hypotension and muscle cramps leading to impaired quality of life. Thus, the aim of the study was to assess the dry mouth in dialysis patients and correlate both with IDWG. The thirst and dry mouth were assessed using DTI & XI scale respectively. The mean Intra dialytic weight gain of study population (N= 60 patients) is 3.5kgs. According to the results of the study the IDWG was highly significant with Xerostomia Inventory and certain other parameters such as frequency of dialysis & blood pressure was also significant with Xerostomia Inventory & dialysis Thirst inventory (DTI) scale. Thereby, the study concludes the IDWG is associated with Xerostomia and Dialysis Thirst Inventory (DTI).

Keywords:- Blood Pressure , Frequency of Dialysis, Xerostomia Inventory , Dialysis Thirst Inventory.

I. INTRODUCTION

The human body is generally made up of water about 70% of the body weight. [1] In dialysis patients, the fluids or water gets accumulated at the interstitial space causing peripheral and pedal oedema due to nil urine output.[2] During dialysis, there is removal of excess fluid or water by the principle of ultrafiltration through an artificial kidney called the dialyzer [3]. The removal amount of fluid from the patients is usually determined by intradialytic weight gain, i.e the weight gained by a patient between two intervals of dialysis. This weight gain is usually due to increased intake of water (> 500 ml / day, including all the consumption of food and water). The increase intake of water is due the thirst and dry mouth, as these patients are restricted to fluids. Thirst is a sensation or urge to drink water and dry mouth (xerostomia) is due to restricted fluid intake and excessive usage of medications. The thirst and dry mouth are associated with other parameters in dialysis patients such as hyposalivation due to fibrosis of salivary gland and secondary atrophy, old age, frequency of dialysis and blood

volume [4,5]. Interdialytic weight gain (IDWG) should be less than 4.0% -4.5% of dry weight. Unfortunately, many patients have an IDWG greater than this value, and some have an IDWG of 10% -20%. High IDWG is linked to an increased risk of all-cause morbidity and cardiovascular disease, such as ventricular hypertrophy and major adverse cardiac and cerebrovascular events. Furthermore, a high IDWG results in additional weekly dialysis sessions, lowering quality of life and increasing costs. [6,7]. The study aims to understand the association between the thirst, dry mouth and intradialytic weight gain.

II. MATERIALS AND METHODS

60 hemodialysis patients were recruited from three different dialysis centre's of Chennai, the study began after obtaining ethical clearance from the institutional ethical committee of A.C.S Medical college and Hospital. The basic demographic details such as age, gender, occupation, educational status were collected along with the dialysis thirst inventory and xerostomia inventory are the assessment tool for thirst and dry mouth respectively. The other dialysis parameters noted were, frequency of dialysis, duration on dialysis (period), blood pressure, dry weight, intradialytic weight gain, interdialytic complications such as hypotension and muscle cramps.

The dialysis thirst inventory and xerostomia inventory are likert scales [8], which measures the thirst and dry mouth range as, 7 means no thirst and 35 means severe thirst whereas 11 means no dry mouth and 55 means severe dry mouth. The data were collected during the dialysis day and analysed using Independent T test with SPSS version 20.

III. RESULTS

Among the 60 patients, the mean intradialytic weight gain was 3.5 kgs. About 53% of the population had intradialytic weight gain more than 3.5 kgs and remaining had less than 3.5 kgs. The basic demographic details of the study population are tabulated in table 1.

DIALYSIS PATIENTS (N=60)			
VARIABLES		COUNT(N)	PERCENTAGE (%)
AGE	18-30 YEARS	3	5
	30-50YEARS	20	33
	50-80 YEARS	37	62
GENDER	MALE	32	53
	FEMALE	28	47
BLOOD PRESSURE	100/70-140/90 mmHg	21	35
	140/90-180/90 mmHg	33	55
	>180/90 mmHg	6	10
BASIC KIDNEY DISEASE	DM	4	7
	HTN	35	58
	OTHERS	21	35
FREQUENCY OF DIALYSIS	TWICE WEEKLY	30	50
	THRICE WEEKLY	30	50
ACCESS	AVF(R)	12	20
	AVF(L)	48	80
IDWG	<3.5Kgs	32	53
	>3.5kgs	28	47

Table 1: Demographic details of the study population.

The results shown in table 2 depicts the p value. The p value less than 0.05 was taken significant

STATISTICAL – p VALUE		
	XI	DTI
IDWG	0.000**	0.017*
BP	0.020*	0.185
Frequency of dialysis	0.774	0.040*

Table 2 : Statistical analysis with independent t test between the scales and dialysis parameters.

IV. DISCUSSION

Thirst and dry mouth are common disturbances in patients undergoing hemodialysis. These disturbances are being neglected, remain under diagnosed and untreated in most of the HD centres. Hence it has a negative impact on patients' survival. So this study intend to raise awareness on appropriate diagnosis and management of these disturbances such that it may decrease the incidence of intradialytic weight gain and improve their quality of life. Thereby aimed to assess the prevalence and compare the symptoms of thirst and dry mouth with intradialytic weight gain and blood pressure among 60 patients undergoing haemodialysis at Dialysis Unit of ACS Medical College and Hospital, Chennai. After obtaining the informed consent from patients, they were interviewed in a one routine visit for HD session and asked to complete the couple of questionnaires which includes Xerostomia Inventory and Dialysis Thirst Inventory. On statistical analysis with Independent t- test, the presence of IDWG showed highly significant with Xerostomia (p=0.000*) and DTI (0.017*). In association with IDWG; the study also correlated the frequency of dialysis and blood pressure with Xerostomia and DTI, which

resulted highly significant of Xerostomia with frequency of dialysis and DTI with blood pressure. The results of the current study were compared with the literature accordingly, the paper published in the year 2004 by the author Bots CP [8]; showed the Xerostomia (0.000**) and DTI (0.001*) to be significant with IDWG. Furthermore, the results were also compared with other literature such as Agnieszka Bruda- Zweich [9] in the year 2018; where the study concluded that IDWG has significant correlation with Xerostomia and DTI. Thereby the current study concludes that IDWG has significant association with Xerostomia and thirst, however both of these also influences the blood pressure and frequency of dialysis.

V. CONCLUSION

The current study suggests that Xerostomia and dialysis Thirst assessment should be done every 3 months which prevents high intradialytic weight gain and patients should be advised on dietary and fluid intake which helps and improves patient's quality of life.

REFERENCES

- [1]. AK Jain, "Human physiology", 3rd edition, chapter 2.
- [2]. Harsh Mohan, "Textbook of pathology", 6th edition, Chapter -22, (2010)
- [3]. Allen R. Nissenso, MD., and Richard N. Fine, MD., "Hand book of dialysis therapy", 5th edition.
- [4]. NS Manikantan, Dhanya Balakrishnan, AD Kumar, Shino P Mathew "Xerostomia". Oral & Maxillofacial Pathology Journal 8 (2), 2017.

- [5]. Wei-Feng Fan Zhang U-Hong Luo Jian-Ying Nu Yong Gu, “Study on the Clinical Significance and Related Factors of Thirst and Xerostomia in Maintenance Hemodialysis Patients”, *Kidney Blood Press Res* 2013;37:464-474 ,DOI: 10.1159/000355717.
- [6]. Paul L. Kimmel, Maria P. Varela , “Interdialytic weight gain and survival in hemodialysis patients: Effects of duration of ESRD and diabetes mellitus”,*Kidney International*, Vol. 57 (2000), pp. 1141-1151.
- [7]. Maurizio Bossola. Riccardo Calvani Emanuele Marzetti, “Thirst in patients on chronic hemodialysis” ,*International Urology and Nephrology*, <https://doi.org/10.1007/s11255-020-02401-5>.
- [8]. Bots CP, Brand HS, Poorterman JH, van Amerongen BM, Valentijn-Benz M, Veerman EC, ter Wee PM, NieuwAmerongen AV. Oral and salivary changes in patients with end stage renal disease (ESRD): a two year follow-up study. *Br Dent J.* 2007 Jan 27;202(2):E3. doi: 10.1038/bdj.2007.47. PMID: 17235362.
- [9]. Bruzda-Zwiech A, Szczepańska J, Zwiech R. Xerostomia, thirst, sodium gradient and inter-dialytic weight gain in hemodialysis diabetic vs. non-diabetic patients. *Med Oral Patol Oral Cir Bucal.* 2018 Jul 1;23(4):e406-e412. doi: 10.4317/medoral.22294. PMID: 29924756; PMCID: PMC6051689.