EFFECT OF NARROW BAND ULTRA VIOLET B (NBUVB) PHOTOTHERAPY TO DECREASE SERUM FERRITIN LEVELS IN URAEMIC PRURITUS PATIENTS WHOSE UNDERGOING REGULAR HEMODIALYSIS IN DR. SARDJITO HOSPITAL YOGYAKARTA

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ABSTRACT

Background. Uraemic pruritus is the complaint most often found in patients with terminal renal failure (15-49 %) and hemodialysis patients (50-90%). Mikroinflamasi role as ferritin be one cause. Phototherapy NBUVB theoretically can lower serum ferritin, thereby reducing the intensity of pruritus in patients .
Objective. The main objective to determine the effect of phototherapy NBUVB to decrease serum ferritin levels of uremic pruritus patients undergoing regular hemodialysis. The next goal NBUVB know the influence of phototherapy to decrease the intensity of itch (VAS).
Methods. Quasi experimental with pre-post comparison design, comparing the reduction in serum ferritin levels before and after phototherapy NBUVB, here $p < 0.05$ is said to be significant.
Results. A total of 29 subjects who underwent the study protocol, 18 were male, the average age was 55.7 years, the largest cause of kidney disease is hypertension (48.3%), average 4.2 years old undergoing hemodialysis. There was a decrease which signifkan where median serum ferritin levels before phototherapy 1693 ng/mL (12.05 to 6000) and after phototherapy 275 ng/mL (12.55-6000) with p 0.001. The degree of intensity of pruritus also decreased significantly where the median VAS before phototherapy 7 (4-10) and after phototherapy 4 (2-8) with p 0.001.
Conclusions. Phototherapy NBUVB lowering serum ferritin levels and degrees of intensity of pruritus (VAS) of uraemic pruritus in patients undergoing regular hemodialysis.

Keywords : CRF (Chronic Renal Failure), Hemodialysis, Uraemia pruritus, Serum Ferritin, Phototherapy NBUVB

ABSTRAK

Latar Belakang. *Pruritus uremia merupakan keluhan yang paling sering ditemukan pada pasien gagal ginjal terminal (15-49%) dan pasien hemodialisis (50-90%). Peranan mikroinflamasi seperti feritin menjadi salah satu penyebabnya. Fototerapi NBUVB secara teori dapat menurunkan feritin serum sehingga mengurangi intensitas pruritus pada pasien pruritus uremia.*

Tujuan Penelitian. *Tujuan utama untuk mengetahui pengaruh fototerapi NBUVB terhadap penurunan kadar feritin serum pasien pruritus uremia yang menjalani hemodialisis rutin. Tujuan sekunder untuk mengetahui pengaruh fototerapi NBUVB terhadap penurunan intesitas pruritus (VAS).*

Metode Penelitian. *Kuasi eksperimental dengan desain pre post comparison, membandingkan penurunan kadar feritin serum sebelum dan sesudah fototerapi NBUVB, dan nilai p <0,05 dikatakan bermakna.*

Hasil. *Sebanyak 29 subyek yang menjalani protokol penelitian, 18 orang laki- laki, usia rerata 55,7 tahun, penyebab gagal ginjal kronik terbanyak adalah hipertensi (48,3%), rerata lama menjalani hemodialisis 4,2 tahun. Terdapat penurunan kadar feritin serum yang signifkan dengan median sebelum fototerapi 1693 ng/mL (12,05-6000) dan setelah fototerapi 275 ng/mL (12,55-6000), nilai p 0,001. Derajat intesitas pruritus (VAS) menurun signifikan dengan median sebelum fototerapi 7 (4-10) dan setelah fototerapi 4 (2-8), nilai p 0,001.*

Simpulan. *Fototerapi NBUVB menurunkan kadar feritin serum dan derajat intensitas pruritus (VAS) pada pasien pruritus uremia yang menjalani hemodialisis rutin.*

Kata kunci: GGK (Gagal Ginjal Kronik), Hemodialisis, Pruritus Uremia, Feritin Serum, Fototerapi NBUVB

Introduction

Uremic pruritus (PU) is the most common complaint in patients with terminal renal failure . Complaints significant pruritus was found in 15 % - 49 % of patients with chronic renal failure and 50 % -90 % in patients dialisis[1] . A cross-sectional study that incorporates 18,000 hemodialysis patients , 42 % had moderate to severe pruritus, resulting in sleep disorders, depression, poor quality of life, and death[1].

Persistent microinflammation theories assume that inflammation may be related to the origin of the PU, such ferritin levels[2,3,4].

Phototherapy (FT) with broad band ultraviolet B (BBUVB) and narrow band ultraviolet B (NBUVB) showed effective results in the management of pruritus uremia[4]. NBU VB better than BBUVB because of the nature NBUVB more minimal in some risks, among others: eritemogenik, pruritogenik and karsinogenik[5]. FT NBUVB can selectively reduce the production of proinflammatory cytokines by cell T[6].

Methods

The design used in this study is a quasi-experimental design with pre - posttest comparison. The study compared reduction in serum ferritin levels before and after phototherapy NBUVB in patients with terminal renal failure undergoing regular hemodialysis suffering from uremic pruritus.

This research was conducted in the Hemodialysis Installation Dr. Sardjito Hospital Yogyakarta from September to December 2013. The subjects in this study were patients with terminal renal failure undergoing regular hemodialysis at Dr. Sardjito Hospital Yogyakarta suffering from uraemic pruritus were willing to participate in research.

The determination of the samples by the following formula:

$$n = \frac{\left[(z\alpha + z_{\beta})s\right]^2}{(x_1 - x_2)^2}$$

Information:

n : The number of patient samples before and after phototherapy NBUVB

Zα : Type I error was set at 5 % , the hypothesis one direction, so Zα =1.64

Zβ : Error type II is set at 10 % , then Zβ = 1.28

S:Standard deviations = 40 (taken from research Giovambattista *et al*., 2002)

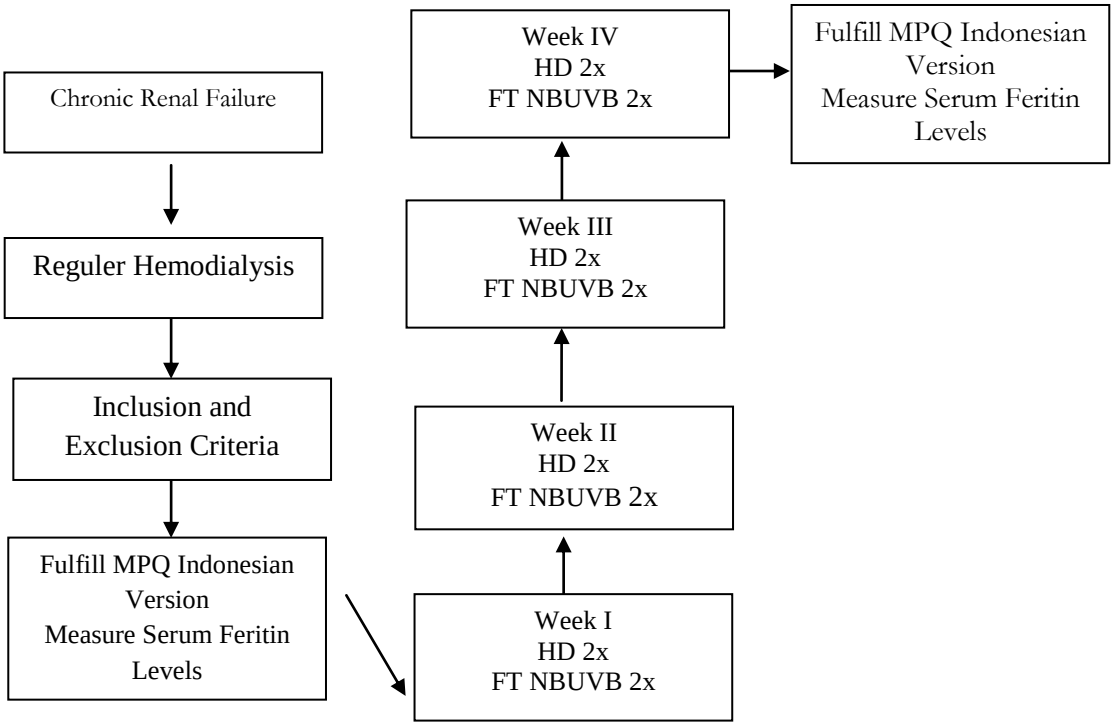
(X1 - X2) : Minimum considered significant difference = 25 (taken from research Giovambattista *et al*., 2002)

So we get :

n: 21, estimates that subjects who did not follow the protocol (drop out)

20 % , the minimum sample size to 26 .

The inclusion criteria study subjects (a) patients with terminal renal failure aged over 18 years who had undergone hemodialysis regularly for at least three months (b) complaints pruritus uremia minimum has lasted more than three months with a VAS score ≥ 4 and includes ≥ 36 % body area (c) the patient is willing to be included in the study and signed informed consent.The exclusion criteria for study subjects (a) found other systemic diseases such dr. Agus Siswanto, SpPD, K-Psi disease hepatobiliary, malignancy, and a history of atopy (b) there is a history of treatment imununosupresan in the last 3 months (c) there is a history of skin diseases suffered today such as: psoriasis, dermatitis with variations, lichen simplex, and dermatophytosis (d) the conditions are active infection such as HIV (e) there is a history of antihistamine drug consumption and the use of emollients in the last one week. Instruments in this study (1) McGill Pain Questionnaire (MPQ) Indonesian version in which there are ratings Visual Analogue Scale to assess the degree of pruritus[7] (2) devices phototherapy NBUVB Daavlin 24 lights Philips TL100W/ 01, Phototherapy with the initiation dose of 300 mJ/ cm2 for 5 minutes which increased 10 % every subsequent phototherapy. Phototherapy is done 2 times a week for 4 weeks . The following lines of inquiry:



Here are the basic characteristics of the subjects who participated in the study:

Variable	N (%) /mean ± SD/median(min-max)
Age	(55.7 ± 9.4)
Sex	
Male	18 (62.07)
Female	11 (37.93)
Caused Chronic Renal Failure	
Diabetes	12 (41.39)
Hipertension	14 (48.28)
Urinary Tract Infection	1 (3.45)
Urinary Stone	1 (3.45)
Trauma	1 (3.45)
Length of hemodialysis	(4.2 ± 3.8)
Serum ferritin levels before FT	1693 (12.05-6000)
VAS before FT	7 (4-10)

FT NBUVB influence on serum ferritin levels and VAS:

Parameter	Before FT	After FT	p value
Serum ferritin levels	1693 (12.05-6000)	275 (12.55-6000)	0.001
VAS	7 (4-10)	4 (2-8)	0.001

Results and Discussion

Subjects who participated in this study of 35 people with 6 people of whom did not complete the entire study protocol/ drop out for various reasons, among others, issues of transport , there is no time for phototherapy, health conditions do not support phototherapy, and family factors subjects who did not supports phototherapy.

Conclusions

Phototherapy NBUVB lowering serum ferritin levels significantly in uremic pruritus patients undergoing routine hemodialysis. Phototherapy NBUVB was significantly lowered itch intensity in uremic pruritus patients undergoing routine hemodialysis.

Expressions of thanks are extended to the esteemed author dr. Iri Kuswadi , Sp.PD - KGH and dr. M.Robikhul Ikhsan. M. Kes, Sp.PD - KEMD as mentors, Chairman of the Department and Chairman of the Program of Internal Medicine Faculty of Medicine, Gadjah Mada University/ Dr. Sardjito Hospital, Head Hemodialysis Installation Dr.Sardjito Hospital along with nurses, Health Sciences Dermatology Faculty of Medicine Gadjah Mada University/ Dr. Sardjito Hospital, dr. Arief Budiyanto, Ph.D, Sp.KK (K), Division of Biochemistry Faculty of Medicine Gadjah Mada University Yogyakarta, dr. Putu Kusumarini, Sp.PD, dr. Verdy, dr. Balgis, dr. Cindy Cekti, dr. Bunga Sejuk Segar, dr. Mita Wulansari, my father and mother Nuswan Adi and Maymunah Hasibuan, my father and mother in law, Yahya Amir and Kartina, beloved wife Zuria, dear sister Dedek Suryandari, fellow resident of Internal Medicine as well as all the parties who provide assistance, guidance and advice so this research can be accomplished.

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