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RELATIONSHIP OF XEROSIS CUTIS WITH PROTEINURIA DEGREES IN CHILDREN WITH NEPHROTIC SYNDROME AT THE HAJI ADAM MALIK HOSPITAL

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Abstract
Introduction: xerosis cutis is a disorder of the skin surface due to reduced fluid or oil content in the skin that moisture on the surface of the skin layer decreases. Proteinuria is a risk factor for the progression of nephrotic syndrome. Nephrotic syndrome if there is proteinuria (≥40 mg / m2 / hour or protein / creatinine ratio ≥ 200 mg / mL or protein + 3 on urine dipstick test), hypoalbuminemia (<25 g / L) and edema.
Objective: To determine the relationship between xerosis cutis and the degree of proteinuria in children with nephrotic syndrome.
Subject and Method: This is is a cross-sectional analytic study, involving 50 subject xerosis cutis with nephrotic syndrome patients. Kruskal Wallis test is used to determine the relationship xerosis cutis with proteinuria degree in children with nephrotic syndrome. This study has been approved by the Health Research Ethics Commission of the Faculty of Medicine, Universitas Sumatera Utara/ H. Adam Malik General Hospital Medan.
Result: Based on the characteristics of 50 research subjects, the age of all research subjects has a median value of 8 (3-16) years with the most age range at the age of 6-10 years, as many as 26 subjects (52%), male subjects as many as 34 subjects (68 %) and women as many as 16 subjects (32%). The duration of nephrotic syndrome has a median value of 2 (1-7) years. There was a significant skin dryness relationship based on the degree of proteinuria (p = 0.002). Thus it can be concluded that the higher the degree of proteinuria, the higher the level of dryness of the skin and the greater the degree of proteinuria in children with nephrotic syndrome, then indirectly describe the more protein that is wasted through urine.
Conclusion: There is a significant xerosis cutis relationship based on the degree of proteinuria (p= 0,002).

Introduction
Background
Dry skin or xerosis cutis is a disturbance on the surface of the skin due to reduced fluid or oil content on the skin so that moisture on the surface of the skin layer decreases. NMF), deficiencies in skin fat and ceramid defenses and the last lack of woven skin moisture in viable epidermis mediated by aquaporin water channel.

Proteinuria is a risk factor for the progression of nephrotic syndrome. Nephrotic syndrome (SN) is a clinical syndrome that has many causes, characterized by increased glomerular membrane permeability with manifestations of massive proteinuri that causes hypoalbuminemia and is usually accompanied by edema and hypercholesterolemia.

Urine protein examination can be done with the simplest urine examination, namely urine examination with dipstick. It is a semi-quantitative urine test, with 1+ results (~ 15 mg / dL), 2+ (~ 100 mg / dL), 3+ (~ 300 mg / dL) and +4 (> ~ 1,000 mg / dL) . In nephrotic syndrome dipstick test shows proteinuria > 2+.

Method
Research Sample
The study was conducted from June 2019 until the minimum sample size was fulfilled, located in the Dermatology and Venereolgy Department SMF of H. Adam Malik General Hospital in Medan. Sampling and sample checking were conducted at the Polyclinic of the Nephrological Division of the Pediatric Department in H. Adam Malik General Hospital, Medan.

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Statistic analysis

Data from the study were statistically analyzed using the SPSS computer program To determine the relationship between xerosis cutis with the degree of proteinuria in children with nephrotic syndrome using the kruskal wallis test.

Result

Based on the characteristics of 50 research subjects, the age of all research subjects has a median value of 8 (3-16) years with the most age range at the age of 6-10 years, as many as 26 subjects (52%), male subjects as many as 34 subjects (68 %) and women as many as 16 subjects (32%). The duration of nephrotic syndrome has a median value of 2 (1-7) years. For complete data on the characteristics of the subjects of this study are presented in table 4.1 below.

Table 4.1. Description of Research Subject Characteristics

Characteristics respondent	**Median (minimum-maximum)**	**n (50)**	**Persentage (%)**
Age (Years)	8(3-16)*		
• 1 – 5 years		12	24
• 6 – 10 years		26	52
• 11 – 15 years		10	20
• ≥ 16 years		2	4
Gender			
• Male		34	68
• Woman		16	32
Old SN (years)	2 (1-7)*		

*Data is presented in the form of median and minimum-maximum values
(data not normally distributed)

In this study the proteinuria degree of subjects was divided into +1 proteinuria by 18 subjects (36%), +2 by 16 subjects (32%), +3 by 14 subjects (28%) and +4 by 2 subjects (4%). Skin moisture level in the subject of this study was divided into; dry (xerosis cutis) by 18 subjects (36%), normal by 28 subjects (56%) and wet by 4 subjects (8%). For complete data on the characteristics of the subjects of this study are presented in table 4.2 below.

Table 4.2. Overview of Proteinuria Characteristics and Skin Moisture

Variabel	**n (50)**	**Persentage (%)**
Proteinuria		
• +1	18	36
• +2	16	32
• +3	14	28
• +4	2	4
Skin moisture		
• Dry	18	36
• Normal	28	56
• Wet	4	8

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Table 4.3. Characteristics of skin moisture

Skin moisture	Average	Standard Deviation
Skin moisture category		
• Dry	30,87 %	4,38
• Normal	39,52%	2,24
• Wet	46,95%	0,64

Data is presented as mean and standard deviation (normal distribution data)

Discussion

In this study xerosis cutis was assessed based on skin dryness through moisture checker examination in the inner arm region (<37%). The statistical analysis used to see differences in skin moisture based on proteinuria is the kruskal-wallis test. Based on the kruskal-wallis test obtained p = 0.002 so it can be concluded that there are at least differences in skin dryness between the two groups of proteinuria.

Dry skin is an abnormality on the surface of the skin caused by a decrease in fluid or oil which results in reduced skin moisture.27 Dry skin is characterized by a decrease in water content in the stratum corneum. Healthy skin must have a moisture content> 10%. Increased Trans Epidermal Water Loss (TEWL) caused by a permeability defect in the skin barrier can cause dry skin. Defects on the skin barrier can be caused by many factors. Disregulation of epidermal lipid content is one of the causes.25,70 Frequent bathing with hot water and excessive use of soap are other factors that contribute to skin barrier defects. Cardinal signs of dry skin are dull skin, grayish white skin, and signs of increased skin topography.

In this study, it was found that the degree of proteinuria relatif + 2 had relatively the same dryness of skin, that is <37% which means the skin was classified as dry (xerosis cutis) while the degree of proteinuria + 1 had skin moisture of 41.32% which was classified as normal. Thus it can be concluded that the higher the degree of proteinuria, the higher the level of dryness of the skin and the greater the degree of proteinuria in children with nephrotic syndrome, then indirectly describe the more protein that is wasted through urine.

The results of this study are relevant to previous studies conducted by Vasantha et al. they found lower amounts of both collagen and non-collagen nitrogen in the skin of children with edema due to protein deficiency compared to healthy children. This causes disruption of collagen maturation and cross-linking of collagen fibers. 10,11,12 Vasantha et al. found levels of several amino acids (proline, glycine, tyrosine) to be reduced in the epidermis of patients with protein deficiency conditions. Glycine is an important part of the structure of the triple helical collagen. Intracellular methionine levels have been shown to be reduced in patients with protein deficiency with edema.

Conclusion

There is a significant xerosis cutis relationship based on the degree of proteinuria (p= 0,002).

Suggestion

Future studies can analyze further about other factors that can affect xerosis cutis, especially in children with nephrotic syndrome. Nephrotic syndrome in children with skin diseases need to be considered the presence of other diseases such as infection.

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