

# Correlation between Cholesterol Serum Level and Xanthelasma from Januari 2014 until Desember 2018 in Dermato-Venereology Outpatient Clinic of Dr. M.Djamil Hospital Padang

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## Abstrak

Xantelasma adalah penyakit kulit yang mengenai dewasa muda dan usia lebih tua. Diagnosis dapat ditegakkan hanya dengan klinis. Xantelasma dapat merupakan penanda penyakit tertentu. Hyperlipidemia dilaporkan terjadi pada sekitar 50% pasien. Belum ada data mengenai hubungan kolesterol dan xantelasma di poliklinik dermato-venereologi dari Januari 2014 sampai Desember 2018. Tujuan penelitian ini adalah menentukan hubungan kadar kolesterol dan xantelasma di klinik rawat jalan dermato-venereologi Rumah Sakit Dr. M. Djamil dari Januari 2014 sampai Desember 2018. Penelitian ini adalah studi retrospektif yang dilakukan dengan menganalisis rekam medis xantelasma pasien di Poliklinik Dermato-Venereologi RS Dr. M. Djamil dari Januari 2014 sampai Desember 2018. Hasil studi mendapatkan 28 pasien xantelasma dan 28 kontrol, 8 pasien (28,57%) adalah laki-laki dan 20 pasien (71,43%) adalah perempuan. Usia paling dominan adalah 36-45 tahun pada 15 pasien (53,57%). Durasi onset xantelasma 50% pasien lebih dari 2 tahun. Temuan laboratorium yang paling umum adalah hiperkolesterolemia pada 21 kasus (75%). Dalam penelitian ini, 14,28% pasien memiliki penyakit sistemik seperti diabetes melitus dan hipertensi. Terdapat korelasi antara kadar kolesterol dan xantelasma secara statistik ( $p < 0,05$ ). Simpulan penelitian ini adalah terdapat korelasi antara xantelasma dan kadar kolesterol yang bermakna. Xantelasma dapat mejadi penanda hiperlipidemia.

**Kata kunci:** xantelasma, kadar kolesterol, hiperlipidemia

## Abstract

*Xanthelasma is common in middle-aged and older adults. Diagnosis can often be made on clinical based alone. Xanthelasma may be an important marker of underlying disease. Hyperlipidemia is reported occur in approximately 50% of patients. There is no data of xanthelasma in Dermato-Venereologi Outpatient clinic during from Januari in 2014 until Desember in 2018. The objective of this study was to determine the correlation between cholesterol level and xantelasma in Dermato-Venereology outpatient clinic of Dr. M. Djamil Hospital from Januari in 2014 until Desember in 2018. This retrospective study was performed by analyzed medical record of the new patient xanthelasma that visited Dermato-Venereology outpatient clinic of Dr. M. Djamil Hospital from Januari 2014 until Desember 2018. The results showed twenty eight patients xanthelasma and twenty eight controls, eight patients (28,57%) were male and twenty patients (71,43%) were female. Most dominant age is 36-45years, fifteen patients (53,57%). Duration of xanthelasma in this study were 50% patients in more than two years. The most common laboratory finding which was hipercholesterolemia in twenty one cases (75%). In this study, 14,28% patients had associated with systemic diseases as diabetes mellitus and hypertension. There were correlation between cholesterol level and xanthelasma statistically significant with  $p < 0,05$ . The conclusion is a correlation between xanthelasma and lipid profile an clinical classificarion of xanthelasma. Xanthelasma is a marker of hyperlipidemia that requiring a complete lipid profile to detect patients potentially to severe it.*

**Keywords:** xanthelasma, cholesterol level, hyperlipidemia

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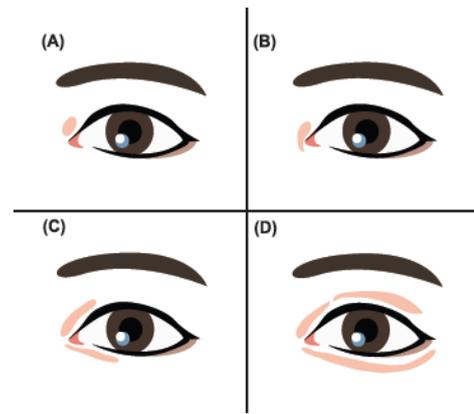
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## Introduction

Xanthomas are plaques or nodules consisting of abnormal lipid deposition and foam cells in skin or in tendons, the most common of which is xanthelasma palpebrum, which usually appears in middle-aged females, with an incidence of 1.1%, and an incidence of only 0.3% in males.<sup>1</sup> The term "xanthelasma" is derived from the Greek word *xanthos* (yellow) and *elasma* (beat-en-metal plate). It is characterized by yellowish plaques occurring most commonly near the inner canthus of the eyelid, more often on the upper, rather than the lower lid. Lesions are symmetrically distributed, and may be singular or multiple, nodular or flat and soft, and semisolid or calcareous.<sup>2,3</sup>

Classification of xanthelasma are mention in Picture 1, (a) grade I: the lesions involve only the upper eyelids, (b) grade II: the lesions extend to the medial canthal area, (c) grade III: the lesions involve the medial side of the upper and lower eyelids, (d) grade IV: the lesions diffusely involve the medial and lateral side of the upper and lower eyelids.<sup>4</sup>

The terms dyslipidemia and hyperlipidemia are used interchangeably, but dyslipidemia is preferable as the lipids may not only be raised but may be present in altered proportions. Xanthelasma is a marker of dyslipidemia, requiring a complete lipid profile to detect patients potentially at increased risk of cardiovascular disease. However, only about half of the patients with xanthelasma are hyperlipidemia. The most frequent Fredrickson hyperlipidemic phenotype in hyperlipidemic patients with xanthelasma is type IIa. Less frequently found are types IIb, III, and IV. The prevalence of type IIa phenotype with xanthelasma is two to three times greater than the prevalence of this phenotype in a matched group of patient with dyslipoproteinemia but without xanthelasmas.<sup>5</sup> Xanthelasmas can be found in patients with elevated LDL cholesterol levels, but most often occur in patients with relatively normal lipid levels.<sup>6,7</sup>



**Picture 1.** Classification of xanthelasma<sup>4</sup>

Lipids are transported in the blood as small spherical particles, the lipoproteins. The function of the protein coating is to confer water solubility to the lipids and to provide cellular receptors and enzymes essential for lipid metabolism. Proteins in the coating with special functions are called apoproteins. The lipoproteins are derived from 2 sources-diet (exogenous) and liver (endogenous). They consists mainly of cholesterol, phospholipid and triglyceride. *High-density lipoproteins* (HDL) are composed mostly of phospholipids and esterified cholesterol. They are beneficial because they clean up molecules released into the circulation during the transport of triglyceride-rich lipoprotein particles. Low-density lipoproteins (LDL) are consist mainly of cholesterol. LDL is the major atherogenic lipoprotein and raised serum levels are associated with coronary heart diseases.<sup>7</sup>

Hyperlipidemias may be primary or secondary. Primary hyperlipidemias are due to severe genetic defects in lipid metabolism or less severe defects plus aggravating factors. Secondary hyperlipidemias are result of other diseases and drugs. The hyperlipidemias are associated with characteristics skin lessions. The main lipid that is stored in both hyperlipidemic and normolipidemic xanthelasmas is cholesterol. Some investigators have observed that xanthelasmas in normolipidemic patients do not differ ultrastructurally from hyperlipidemic xanthelasmas or other types of hypercholesterolemic xanthomas.<sup>6,7</sup> However, xanthelasmas do not develop in most patients with hypercholesterolemia and these lesions can also develop in normolipidemic patients.<sup>5</sup>

Histologically, xanthelasma resemble other xanthomas, that are associated with hypercholesterolemia, they are composed of foamy histiocytes with occasional Touton giant cells. They differ from other types of xanthomas by the superficial location of the foam cells and the nearly complete absence of fibrosis. Ultrastructurally, xanthelasma resemble other types of hypercholesterolemic xanthomas. The eyelids are exposed to constant movement and friction, and this might be the reason why xanthelasma develop in these areas. There might also be an intrinsic sensitivity in these patients to this proposed capillary leakage.<sup>5</sup>

A benign condition which never limits function, xanthelasma palpebrarum is cosmetically disturbing, therefore, patients consult dermatologists, ophthalmologists, or surgeons for lesion removal. Several methods are used to treat xanthelasma palpebrarum and these include simple surgical excision, cryotherapy, chemical peeling with trichloroacetic acid (TCA), radiofrequency (RF), and laser treatment. Each modality has its own advantages and disadvantages.<sup>7</sup>

For dermatologists seeking to evaluate the causes of xanthelasma, the standard approach is to order a serum or plasma lipid profile, performed after the patient fasts overnight. These studies permit consideration of secondary causes of lipid abnormalities, particularly if the patient has elevations of LDL cholesterol (>150 mg/dL) or triglycerides (>150 mg/dL), or decreased levels of HDL cholesterol (<55 mg/dL).<sup>1</sup> The aim of this study is to know the correlation of lipid profile and xanthelasma clinical classification in Dermato-Venereology outpatient clinic from Januari 2014 until July 2018.

## Methods

Retrospective study was performed by analyzing medical record of the new patient that visited Dermato-Venereology Outpatient clinic of Dr. M. Djamil

Hospital from Januari 2014 until Desember 2018. Variables studied were age, sex and lipid profile and clinical classification of the patients.

## RESULTS

Twenty eight patients were studied during the period January 2014 until Desember 2018. Twenty patient (66,67%) were females and 8 (33,33%) were males with 2:1 ratio. The patient >26-≤ 35 years old were 5,55% and >36-≤ 45 years old were 44,44%. The patient had duration xanthelasma less than one year were 3 patients (16,67%) as seen in Table 1.

**Table 1.** Demographic characteristic of xanthelasma

Characters	Number	%
Sex		
Male	8	28,57%
Female	20	71,43%
Age		
>18- ≤ 25	0	0%
>26-≤ 35	3	10,71%
>36-≤ 45	15	53,57%
>46-≤ 55	5	17,86%
>56-≤ 65	2	7,14%
>65	3	10,71%
Duration		
Less than 1 year	8	28,57%
Between 1 and 2 years	6	21,43%
More than 2 years	14	50,00%

Table 2 show the lipid abnormalities of xanthelasma patients. Increase of total cholesterol and decrease of HDL were the most common lipid abnormalities of xanthelasma (75% and 64%), followed by elevated of triglyceride (64,28%) and increase of LDL cholesterol level (35,71%) and associated with systemic diseases were 4 patients. Clinical classification of xanthelasma grade I, 20 patient (71,43%), grade II (14,28%), grade III (10,71%), grade IV (3,57%) as shown in Table 3.

**Table 2.** Distribution of plasma lipid profile of xanthelasma

Lipid	Range	Number	%
<b>Abnormalities</b>			
Total cholesterol	>200 mg/dl	21	75,00%
LDL cholesterol	>150 mg/dl	10	35,71%
HDL cholesterol	<55 mg/dl	18	64,28%
Trigliserida	>150mg/dl	13	46,23%
Associated systemic disorders	-	4	14,28%

**Table 3.** Distribution of clinical classification of xantelasma

Clinical classification	Number	%
Grade I	20	71,43%
Grade II	4	14,28%
Grade III	3	10,71%
Grade IV	1	3,57%

**Table 4.** Correlation between cholesterol level and xantelasma

	Cholesterol level	P
Xanthelasma	224,61±29,77	0,000*
Control	169,39±35,83	

Table 4 show there was the correlation between lipid profile and clinical classification of xantelasma, with  $p < 0,05$

## DISCUSSION

According to the fifth years report during Januari 2014 until Desember 2018, has been found 28 cases xanthelasma palpebrarum and more common in women than man. This study consistent with Özdöl *et al* (Turkey,2008) that was reported from 200 xanthelasma patients with the demographic and clinical characteristics data of the two groups have mean age  $49 \pm 11$  years and most patient were women as 66 patients (66%).<sup>6</sup> As well as study by Bergman R (Israel,1994) who said that xanthelasma

are more common in women and tend to increase in prevalence with age.<sup>5</sup>

In this study, the most affected age groups was >36-< 45 years old (53,57%), which was similar to the data published in many literature that xanthelasma can be encountered at middle-aged and older adults.<sup>3</sup> In this study, most of the patients (50%) who came to dermatology and venereology out patient with less than a 12-month duration. This may be related to the fact that the majority of xanthelasma palpebrarum cases are reported in females, who are more conscious about cosmetic issues.<sup>8,9</sup>

It is essential to obtain blood samples after a fasting period of 12-16 hours and to avoid food extremely rich in carbohydrates and fats. In this study, serum levels of HDL (< 50 mg/dl) and cholesterol (>200 mg/dl) were found in 75% and 64% patients. This is probably due to pattern of consumption most people in Padang that contain lots of cholesterol. Jain observed significantly high mean serum values for triglycerides and cholesterol in xanthelasma palpebrarum.<sup>10</sup> Rubinstein *et al* (Texas, 2014) also observed significantly high mean serum values for triglycerides and cholesterol in xanthelasma palpebrarum.<sup>9</sup> Meanwhile, Sharma *et al* (India, 2013) did not find any significant difference in mean trigliserida level between the patient and normal groups.<sup>11</sup>

In this study, there are four patients who have systemic diseases disorders that is diabetes and hipertension. This is accordance with study by Pitambe and Schulz (South Africa, 2005) who said that dyslipidemia in diabetes mellitus usually occur in young insulin-resistant diabetics.<sup>7</sup> Insulin is necessary for the normal clearing action of lipoprotein lipase on triglyceridemia results in eruptive xanthomas that clear on treatment. Jain *et al* (India,1998) was reported xanthelasma palpebrarum assoociated systemic disease in 42% of cases.<sup>10</sup> The primary cause can be inherited or appear in systemic diseases where high lipid level occur, for example, in diabetes mellitus, hypothyroidism, obesity, liver disturbance, nephrotic syndrome, biliary tract obstruction. The early diagnosis of the underlying disease can significantly affect future health.<sup>11,12</sup>

## CONCLUSION

There was correlation between xanthelasma and lipid profile an clinical classificarion of xanthelasma. Xanthelasma is a marker of hyperlipidemia that requiring a complete lipid profile to detect patients potentially to severe it.

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