



## Characteristics of Peripheral Arterial Disease Patients in Vascular and Endovascular Surgery Department Dr. Mohammad Hoesin General Hospital between January 2018 - December 2019

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### Abstract

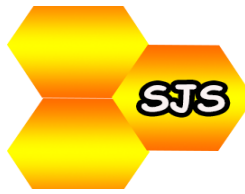
**Background:** Peripheral artery disease (PAD) is a chronic occlusive arterial disease of the extremities caused by atherosclerosis leading to stenosis or occlusion characterized by decreased blood flow to the limb, due to obstruction or narrowing of the blood vessels. PAD often underdiagnosed and poorly understood. Median annual expenditure per individual for patients with PAD was \$ 11.553 to \$ 42.613 in the United States. The lack of data on PAD in South Sumatra was the based for investigators to conducting this study.

**Methods:** This research is a retrospective descriptive study. The purpose of this study was to describe the characteristics of PAD patient based on the Rutherford classification. There are 33 cases in this study.

**Results:** The dominant patient was male, the youngest age was 28 years old and the oldest age was 71 years, with a mean age of 55.8 years. Diabetes mellitus, stage 1 hypertension, LDL more than 100 mg/dL, ABI results that showed PAD, and stage 2 Rutherford were the dominant cases in the sample of this study.

**Conclusion:** Early prevention and treatment from vascular and endovascular surgery can be considered as the most important for the management of peripheral arterial disease patient.

**Keyword:** peripheral arterial disease, rutherford classification.



## 1. Introduction

Peripheral artery disease (PAD) is a chronic occlusive arterial disease of the extremities caused by atherosclerosis that leads to stenosis or occlusion with decreased blood flow to the limb, due to obstruction or narrowing of the blood vessels.<sup>1-5</sup> PAD has a three to fourfold increased risk of cardiovascular disease (CVD) morbidity and mortality compared to individuals without PAD.<sup>1</sup> It is estimated that 20-30% of the population worldwide has PAD and more than 25% of individuals over 75 years of age have PAD.<sup>2</sup> In primary health practice across the United States, 29% of patients over 70 years of age or 50 years of age with a history of smoking or diabetes have developed PAD.<sup>3</sup> PAD is often diagnosed late, untreated, poorly applied by society.<sup>3,6</sup> The amputation rate in PAD patients in the United States is very high. From 2000 to 2008 in the United States found 186.338 PAD sufferers were amputated during that time.<sup>7</sup> PAD treated with a 1-year mortality rate of 20% and a 1-year limb loss rate of 20%.<sup>8</sup> Average annual expenditure per individual for patients with PAD is \$ 11.553 to \$ 42.613 in the United States.<sup>9</sup> However, there are no complete data on the number of PAD sufferers in Indonesia. The lack of data on PAD in South Sumatra is the basis of the conduction of this research.

## 2. Method

This research is a retrospective study with a descriptive design. This research was conducted at the Vascular and Endovascular Surgery Division, FK UNSRI / RSMH Palembang. Research making took place from January 2018 to December 2019.

The population is the population of South Sumatra, the reachable population is PAD patients who come to the FK UNSRI / RSMH Vascular and Endovascular Surgery Division, who meet the inclusion and exclusion criteria.

Inclusion criteria were PAD patients who were willing and had complete variable data. The exclusion criteria were patients who had a history of major amputation. The characteristics of patients with the peripheral arterial disease were divided into gender, age, diabetes mellitus, history of hypertension, hyperlipidemia, ABI value, Rutherford classification described descriptively and data were presented in tabular form and analyzed using SPSS version 21.

## 3. Results

### General characteristics

Based on gender, there were 17 male patients and 16 female patients. Based on age, the mean age of patients with the peripheral arterial disease was 55.8 years with an age range of 28-71 years. Based on the presence of diabetes mellitus, there were 21 subjects with diabetes mellitus and 12 patients

without diabetes mellitus. Based on the record of hypertension, there were 6 people without a history of hypertension, 7 people with prehypertension, 14 people with grade 1 hypertension, and 6 people with grade 2 hypertension.

### Laboratory characteristics

Based on the results of laboratory examinations, we found that there were 13 subjects with PAD in this study with an LDL value of  $\leq 100$  and 20 subjects with an LDL value of  $>100$ .

### Special characteristics

The results of the ABI examination showed 7 patients were included in the chronic limb ischemia (CLI) category, 24 patients were included in the PAD category, 1 patient was in the borderline category, 1 patient was in the category of arterial calcification, and there were no patients in the normal category. According to the Rutherford classification, in this study we found 2 patients in the stage 0 category, 4 patients in the stage 1 category, 9 patients in the stage 2 category, 6 patients in the stage 3 category, 4 patients in the stage 4 category, 5 patients in the stage 5 category, and finally 3 patients in the stage 6 category.

**Table 1.** General characteristics of research subjects (N=33)

Characteristics		N	%
Sex	Male	17	51.5
	Female	16	48.5
Age	Median	55.8	169.1
Diabetes Mellitus	Yes	21	63.6
	No	12	36.4
Hypertension	No	6	18.2
	Pre-hypertension	7	21.2
	Grade 1 hypertension	14	42.4
	Grade 2 hypertension	6	18.2
Hypercholesterolemia	LDL $\leq 100$ mg/dL	13	39.4
	LDL $> 100$ mg/dL	20	60.6
ABI	CLI	7	21.2
	PAD	24	72.7
	Borderline	1	3.0
	Normal	0	0.0
	Calcification	1	3.0
Rutherford classification	Stage 0	2	6.1
	Stage 1	4	12.1
	Stage 2	9	27.3
	Stage 3	6	18.2
	Stage 4	4	12.1
	Stage 5	5	15.2
	Stage 6	3	9.1



#### **4. Discussion**

The results of this study are consistent with the research of Hiatt WR et al (2001) which states that the prevalence of peripheral arterial disease incidence is the same between men and women. The results of this study are slightly different from the study by Norgren et al, which states that men suffer more from peripheral arterial disease with a ratio of 2:1.<sup>10</sup>

In the United States alone, cases of peripheral arterial disease who are more than 60 years old have a greater percentage of those aged less than 60 years. In line with the results of the study by Schroll et al, who reported that patients with peripheral arterial disease were mostly found in respondents aged over 60 years.<sup>11</sup> According to Criqui et al, peripheral arterial disease is most commonly found in the 70–82-year age category with a percentage of 14.5%.<sup>12</sup> According to a study by the NHANES (national health and nutrition examination study), ages over 65 have a higher risk of peripheral arterial disease.<sup>4</sup>

The results of this study are consistent with the study by Schroll which showed that diabetes mellitus is a risk factor for peripheral arterial disease.<sup>11</sup> This is in line with the results of a study by Ness et al. Which states that diabetes mellitus is a predisposing factor for peripheral arterial disease.<sup>12</sup> The results of this study are consistent with the Edinburgh Artery Study, where the prevalence of patients with the peripheral arterial disease increased in people with DM and poor blood sugar tolerance (20.6%) compared to people with good blood sugar tolerance (12.5%).<sup>13</sup>

The results of this study are consistent with research by Schroll which showed that hypertension is a risk factor for peripheral arterial disease.<sup>11</sup> This is in line with the results of the study by Ness et al. Which stated that hypertension is a predisposing factor for peripheral arterial disease.<sup>12</sup> Likewise mentioned by Criqui et al in their study, that hypertension is a modifiable risk factor.<sup>14</sup> Approximately 50% -92% of patients with PAD suffer from hypertension.<sup>15</sup> The risk of developing claudication increases 2.5-4-fold in hypertensive patients.<sup>16</sup>

#### **5. Conclusion**

Early prevention and treatment from vascular and endovascular surgery can be considered as the most important for the management of peripheral arterial disease patient.

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