

ASSESSMENT OF DYSLIPIDEMIA IN PRE-DIABETIC PATIENTS WITH ACUTE CEREBRAL INFARCTION

*Tran Thua Nguyen¹, Tran Huu Dang²,
Ly Thi Thu Van³, Le Trung The², Tran Huu Thanh Tung²*

(1) Hue Central Hospital Vietnam

(2) Hue University of Medicine and Pharmacy, Vietnam

(3) Nguyen Trai Hospital, Ho Chi Minh city, Vietnam

Abstract

Disorders of lipid components increased cardiovascular risk. Pre-diabetes a decline in glucose metabolism. Even pre-diabetes stage appeared vascular complications of diabetes such as cerebral infarction. **Objectives:** 1. To evaluate the concentration of lipid components in pre-diabetic patients with acute cerebral infarction; 2. To evaluate the frequency of common component of lipid disorder. **Method:** Descriptive and cross-sectional study on 106 pre-diabetic patients with cerebral infarction in Nguyen Trai hospital, HCM city. Patients were evaluated for blood pressure, BMI, waist circumference, waist/hip ratio. Fasting glucose concentration and lipid profile were also recorded. Dyslipidemia assessment as guideline in 2008 by the Vietnam Society of Cardiology. Data were analysed by SPSS 11.5 statistical software. **Results:** The rate of dyslipidemia in patients with pre-diabetes cerebral infarction was 80.19%; in men was 82.14%, in women was 78%. Frequency of common component of lipid disorders was increased LDL-Cholesterol, accounted for 54.72% and increased total cholesterol, accounted for 47.17%. Percentage of increase LDL-cholesterol was high proportion in all three age groups: <60, 60-74 and ≥ 75 , respectively 56%, 58.33% and 51.11%. **Conclusion:** Regardless of the dyslipidemia in pre-diabetic patients with cerebral infarction

Key words: Dyslipidemia, pre-diabetes, cerebral infarction.

1. BACKGROUND

Disorders of lipid components increased cardiovascular risk, including stroke. Two independent studies of Muller and Magandanz Thanhauser found a correlation between increased cholesterol and cerebral atherosclerosis. The consequences of cerebral atherosclerosis can be a cerebral hemorrhage and/or cerebral infarction [4].

Pre-diabetes is impairment of glucose metabolism. Even pre-diabetes stage appeared vascular complications of diabetes such as cerebral infarction [5].

Stemming from the above reasons, I decided to choose this topic to the target:

1. To evaluate the concentration of lipid

components in pre-diabetic patients with acute cerebral infarction

2. To evaluate the frequency of common component of lipid disorder.

2. SUBJECTS AND METHODS:

2.1. Subjects

We enrolled 106 pre-diabetic patients with acute cerebral infarction at Intensive Care Unit – Poison Control Department in Nguyen Trai hospital, HCM city from 05/01/2011 to 04/30/2012.

Exclusion criteria: lacunar infarct

2.2. Methods

Descriptive cross-sectional study

2.2.1. Diagnostic criteria

- The appearance of acute cerebral infarction

Corresponding author: Tran Huu Dang, email: bsthdang@gmail.com

- Received: 05/06/2015 * Revised: 25/06/2015 * Accepted: 10/07/2015

was evaluated on MR images and/or CT scans by low density lesion of brain (20- 30 Hounsfield unit). Proton density - and T2-weighted scans usually demonstrated regions of hyperintensity corresponding to acute infarcts but proton density-weighted scans often showed better

definition of the lesion in terms of regional anatomy [4].

- According ADA (2010): Patients diagnosed with prediabetes based on HbA1c (5.7%-6.4%) [1].

- Diagnosis of dyslipidemia.

Table 1. Guideline on dyslipidemia in 2008 of the Vietnam Heart Association [2].

Test	mg%	mmol/l	
Total Cholesterol	<200	5.20	Normal
	200-239	5.2-6.21	Borderline high
	≥240	≥6.24	High
Triglyceride	<150	<1.73	Normal
	150-199	1.73-2.29	Borderline high
	200-499	2.3-5.74	High
	≥500	≥5.75	Very high
HDL- Cholesterol	<40	<1.03	Low
	≥60	≥1.54	High
LDL- Cholesterol	<100	<2.57	Optimal
	100-129	2.57-3.32	Suboptimal
	130-159	3.34-4.09	Borderline high
	160-189	4.11-4.86	High
	≥190	≥4.88	Very high

2.2.2. Techniques

- After hospitalization, all patients were examined and have blood test at the Department of Biochemistry in Nguyen Trai hospital.

- Data were analysed by SPSS 11.5 statistical software.

3. RESULTS

3.1. The rate of dyslipidemia

Table 2. The rate of dyslipidemia

		n	%	p
Dyslipidemia	Yes	85	80.19	p<0.01
	No	21	19.81	
Total		106	100.0	

In the group of studied patients, the rate of dyslipidemia is very high (80.19%), the difference was statistical significance (p <0.01).

Table 3. Concerning pre-diabetes and dyslipidemia by gender

Dyslipidemia	Yes		No		Total	
	n	%	n	%	n	%
Male	46	82.14	10	17.86	56	100.0
Female	39	78.0	11	22.0	50	100.0
	p>0.05					

In the dyslipidemia group, the proportion is higher in male than females (82.14% versus 78.0%), the difference was not statistical significance (p> 0.05).

Table 4. Concerning pre-diabetes and dyslipidemia by age

Dyslipidemia	Yes		No		Total	
Age	n	%	n	%	n	%
<60	20	80.0	5	20.0	25	100.0
60-74	29	80.56	7	19.44	36	100.0
≥75	36	80.0	9	20.0	45	100.0
	p>0.05					

In the dyslipidemia group, the proportion of patients ≥75 years is the highest (42.35%), lowest in the group <60 years old (23.53%), but the difference was not statistical significance (p> 0.05).

3.2. Frequency distributions of dyslipidemia components

Table 5. Frequency distributions of dyslipidemia components

Types of disorders	Total patients (n= 106)	
	n	%
High total Cholesterol	50	47.17
High Triglycerid	42	39.62
Low HDL-C	45	42.45
High LDL-C	58	54.72

The highest components of lipid disorders was increased cholesterol and increased LDL-cholesterol.

Table 6. Frequency distributions of dyslipidemia components

Sex	Male (n=56)		Female (n=50)		p	Total (n=106)	
Types of disorders	n	%		%		n	%
High total Cholesterol	24	42.86	26	52.0	>0.05	50	47.17
High Triglycerid	19	33.93	23	46.0	>0.05	42	39.62
Low HDL-C	28	50.0	17	34.0	>0.05	45	42.45
High LDL-C	28	50.0	30	52.0	>0.05	58	54.72

The highest proportion of lipid disorders in men were decreased HDL-C and increased LDL-C, in women were increased cholesterol and increased LDL-C.

Table 7. Frequency distributions of dyslipidemia components by aged group

Age	<60 (n=25)		60-74 (n=36)		≥75 (n=45)		p	Total (n=106)	
Types of disorders	n	%	n	%	n	%		n	%
High total Cholesterol	15	60.0	18	50.0	17	37.78	>0.05	50	47.17
High Triglycerid	12	48.0	15	41.67	15	33.33	>0.05	42	39.62
Low HDL-C	12	48.0	18	50.0	15	33.33	>0.05	45	42.45
High LDL-C	14	56.0	21	58.33	23	51.11	>0.05	58	54.72

In all three aged groups of study: increased LDL-C was relatively high proportion.

4. DISCUSSION

4.1. The percentage of dyslipidemia

In our study, the proportion of dyslipidemia is 80.19%. This rate is higher than those of Hoang Khanh and Ngo Xuan Khanh: dyslipidemia accounted for 67.4% of stroke patients [3], Vo Duy Trinh: 51.2% of patients with cerebral infarction and 37.1% of patients with cerebral hemorrhage disorder at least one lipid component [7].

Relationship between dyslipidemia and sex: our results, the rate of dyslipidemia in men is 82.14%, in female is 78.0%. Compared with study of Pham Thuy Hang: 81.5% for men and 88.1% for women [2], the our results is equivalent in men, but in women is much lower. Meanwhile, research by Tran Thi Doan, Nguyen Vinh Quang: 86.9% for men and 74.7% for women [1], there are the difference with us. This difference may be due to our study in patients with cerebral infarction, pre-diabetes and male have rates of overweight, obesity is higher or diet, exercise less than in women.

Relationship between dyslipidemia and aged groups: In our study, the rate of dyslipidemia in all three aged groups are high (80% or more). This result is similar the comments by Tran Thi Doan, Nguyen Vinh Quang: dyslipidemia rate is highest in the group > 60 years (85.7%) [1].

4.2. Frequency distributions of dyslipidemia components.

According to the results of table 3.4: the highest components of lipid disorders in my study is increased LDL-Cholesterol (54.72%) and increased total cholesterol (47.17%).

Our results also showed that: decreased HDL-cholesterol rate is 50% in men and is 34% in women, this result is similar to the study of Tran Thi Doan ,Nguyen Vinh Quang at National Hospital of Endocrinology (50.8% in men and 34.3% in women).

Meanwhile, the increased total cholesterol rate is 42.86% in men, 52% in women; increased LDL-

cholesterol rate is 50% in male, 52% in female, this results are much higher than the study of Tran Thi Doan Nguyen Vinh Quang (26.2% increased cholesterol in men, 18.2% in women; increase LDL-cholesterol is 24.6% of male, 21.2% of female). When comparing the rate of increased triglycerides of two authors with our results, in female is roughly equivalent to 48.5% compared with 46%, while our study, in men much lower 33.93 % versus 55.7% [1].

In The Oyabe Study, 10-year follow-up in 4989 (1.523 men, 3.466 women) Japanese people aged 35 to 79, found that low levels of HDL-cholesterol have meaningful relationships and independent an increase in the incidence of stroke and stroke ischemia[4]. High HDL-cholesterol concentrations in plasma represents a rejection of cholesterol and reduces the risk of cholesterol deposition [6]. In contrast, decrease HDL-cholesterol will lead to deposition of cholesterol and increased risk of atherosclerosis. This is entirely consistent with the pathogenesis of cerebral infarction.

According to table 3.5: high cholesterol rate in the group <60 years of age is the highest (60%). Meanwhile, the ratio of increased LDL-C is relatively high proportion of the 3 age groups <60, 60- 74 and 75 respectively $\geq 56\%$, 58.33% and 51.11%.

5. CONCLUSION

Through the survey on 106 cerebral infarction patients with pre-diabetes, we had some comment:

5.1. The percentage of dyslipidemia in cerebral infarction patients with pre-diabetes is 80.19%; 82.14% in male, 78% in female.

5.2. The frequency of common components of lipid disorders is increased LDL-Cholesterol: 54.72% and increased cholesterol: 47.17%.

The percentage of increased LDL-cholesterol are relatively high proportion in all three age groups: <60, 60-74 and 75 respectively $\geq 56\%$, 58.33% and 51.11%.

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