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ASSESSMENT OF THE USE OF DRUG TREATMENT OF DYSLIPIDEMIA AT MILITARY HOSPITAL 105

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Abstract. Dyslipidemia characteristics of outpatients with dyslipidemia for the first time, characteristics of drug use, and effectiveness in controlling dyslipidemia indexes after 3 months of treatment at Military Hospital 105 were studied. A cross-sectional, retrospective descriptive study was investigated on adult outpatients who were diagnosed with dyslipidemia for the first time, examined and treated as outpatients at the hospital, and monitored for effectiveness in blood lipid control for 3 months after starting treatment. The decision to use the drug at the start of the study and the achievement of treatment goals at the time points were analyzed based on the ESC/EAS 2019 guidelines for treating DL. The majority of patients were aged > 45 years (80.5%), the most common group of patients was aged 46 - 59 (43.7%). The number of patients with comorbidities accounted for 62.8%. 87% of patients had mixed dyslipidemia, 54.8% of patients were in the group with high and very high cardiovascular risk. 93.5% of patients needed to start treatment with drugs based on LDL-C index at the time of treatment initiation. The majority of patients used monotherapy regimens, in which, Statins were used the most in the study sample with the rate of 95.3% in the initial treatment regimen. 70.4% of patients had an inappropriate decision to initiate treatment, of which the most common was the decision to use statins with insufficient dosage in patients (45.1%). Only 28% of patients reached their LDL-C goal after 3 months of treatment. From the high percentage of patients who did not reach the treatment goal in the study sample, it is necessary to consider using stronger statin therapy, higher dose statin, or using another treatment regimen for patients.

Keywords: Military Hospital 105, dyslipidemia, LDL-C, Statins, outpatient.

1. Introduction

Dyslipidemia (DL) is a medical condition when one or more lipid parameters are abnormal (elevated cholesterol (CT) or increased triglycerides (TG), or increased low-

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density lipoprotein cholesterol (LDL-C), or decreased high-density lipoprotein cholesterol (HDL-C) [1]. This is a common disease in the world as well as in Vietnam. There are many causes of DL, which can be genetic (primary) or caused by lifestyle, or drug-induced diseases (secondary) [2]. If DL is not properly and adequately treated, it will cause many life-threatening complications such as atherosclerosis, myocardial infarction, cerebrovascular accident affecting the patient's quality of life and is a health burden for society [3-5]. Although the benefits and role of drugs in the treatment of dyslipidemia have been proven, the current control of dyslipidemia is still not optimal in Vietnam [6]. Therefore, good control of blood lipid indexes will have a positive effect in reducing mortality from diseases related to cardiovascular events [7].

Military Hospital 105 is a Grade I general hospital under the General Department of Logistics of the Vietnam People's Army, which has the task of examining and treating the following subjects: the army, military families, health insurance, and private services. In recent years, the number of patients with dyslipidemia coming to the hospital for examination and treatment has increased, while the guidelines on the treatment of dyslipidemia at the hospital have not been updated. In addition, no specific studies have been conducted to study the characteristics of the group of patients using drugs to treat dyslipidemia and evaluate the rationality of drug use and treatment outcomes for blood lipid disorders in the hospital. Therefore, analyzing the use of drugs to treat dyslipidemia in order to make recommendations to make the treatment more effective, safe, and reasonable at Military Hospital 105 is necessary.

Stemming from the above fact, in order to contribute to improving the quality of drug use in the treatment of dyslipidemia at the hospital, we conducted a study to analyze the use of drugs in the treatment of dyslipidemia of patients who came to the hospital for examination and outpatient treatment at Military Hospital 105 and evaluated the effectiveness of controlling DL after 3 months of treatment.

2. Content

2.1. Materials and methods

**** Research subjects***

- Survey on the characteristics of patients using drugs to treat lipid disorders on outpatients at Military Hospital 105.

- Survey on the characteristics of using drugs to treat lipid disorders on outpatients at Military Hospital 105.

- Analyzing the effectiveness and suitability of using drugs to treat dyslipidemia on outpatients at Military Hospital 105.

Outpatients diagnosed with DL were assigned to use drugs to treat DL for the first time at the clinic of Military Hospital 105 during the period from January 1, 2019, to April 30, 2019, with the following criteria: Inclusion criteria: Patients had plasma lipid blood test at the time of starting treatment and were assigned to use drugs to treat DL at the outpatient clinic of Military Hospital 105 during the follow-up period. Exclusion criteria: Exclude patients who do not adhere to treatment, pregnant and lactating women.

*Sample size**:*** all patients who meet the selection criteria within 04 months.

**** Research method***

- Retrospective, descriptive, analytical, and non-interventional study.
- *Sampling method:* Using the convenient, non-probability sampling method according to the criteria: the sample is selected according to the objectives of the research, the subjects that satisfy the selection and exclusion criteria presented in the research subjects above.

2.2. Data collection method

Table 1. Information to be collected on patients

T0	When study started	- Full name, age, gender - Pathological features (dyslipidemia, comorbidities) - Blood biochemical tests of the patient at the time of treatment initiation (CT, LDL-C, HDL-C, TG). - Diagnosis and prescribed drugs.
T1, T2, T3	During treatment	During treatment, patients are re-examined and have the above tests, adjusted drug doses and changed treatment regimens (if applicable).

Note:

+ T0: Initial of treatment;
+ T1: Patients re-examined after 01 month of treatment (30 days ± 10 days);
+ T2: Patients re-examined after 02 months of treatment (60 days ± 10 days);
+ T3: Patients re-examined after 03 months of treatment (90 days ± 10 days).

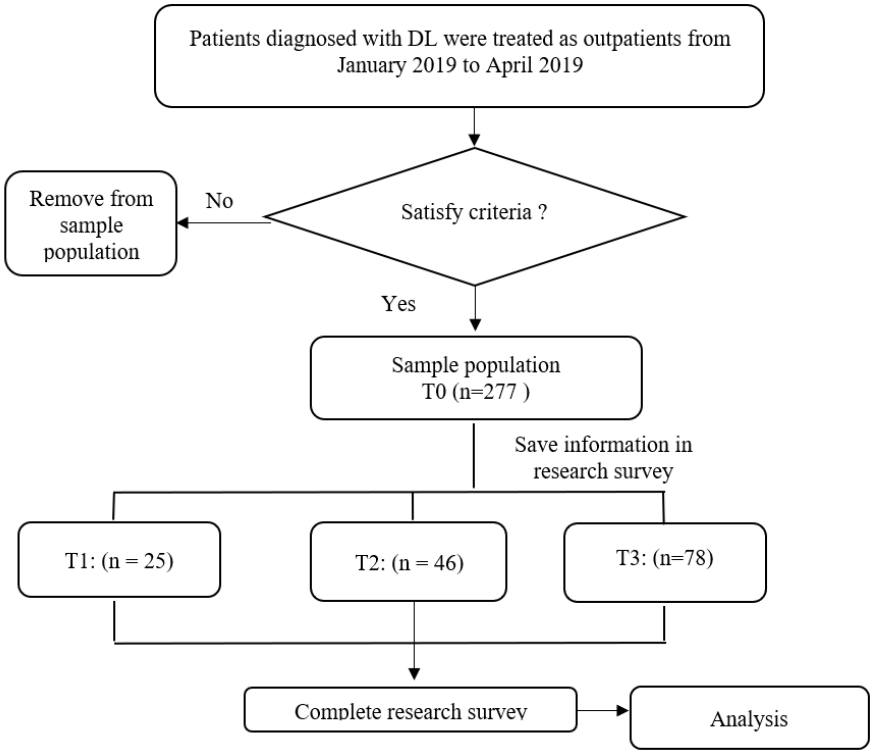

Figure 1. Research Protocol

At Military Hospital 105, diseases are coded according to ICD10 code (DL disease has code E78). From the information technology department at the hospital, all patients diagnosed with DL according to disease code ICD10 (E78) from January 2019 to April 2019 were 1412 patients. Then, we used the screening tool on Excel 2019 to filter out patients diagnosed with DL for the first time from January 2019 to April 2019 who were assigned a full blood lipid index (LDL-C test. C, HDL-C, CT, TG), with indications for using drugs to treat DL. From there, 277 patients who met the selection criteria were selected to be included in the study.

We continued to monitor and collect the information recorded in the electronic medical records of patients who come for follow-up visits continuously within the next 3 months (at the time T1, T2, T3) and are assigned tests to evaluate the effectiveness of treatment (LDL-C, TC, TG, HDL-C) at least once during the follow-up visits and collected 114 patients who met the selection criteria for evaluation.

2.3. Research questions

- Patient characteristics at the time of treatment initiation:
  + Characteristics of age, gender, co-morbidities;
  + Classification of DL, plasma lipid index of patients at the beginning of treatment;
  + Assess the patient's cardiovascular risk at the time of treatment initiation.
- Characteristics of drug use of patients:
  + List of drugs to treat DL used in the study;
  + The patient's treatment initiation protocol used in the study.
- Analyze the effectiveness and appropriateness of using drugs to treat DL in the case:
  + Analyze the necessity of using drugs to treat DL at the time of starting treatment based on the LDL-C index;
  + Analyze the decision to choose drugs to treat DL;
  + Changes in blood lipid indexes before and after treatment;
  + Rate of achieving treatment goals at different time points.

2.4. Evaluation criteria

Evaluate the effectiveness of patients' LDL-C control at treatment time points. The decision to take medication at study initiation and result achievement were based on the recommendations of the ESC/EAS 2019 [7]. In addition, we also had a reference to the 2015 Vietnam Cardiology Association’s guideline because this was the latest guideline in Vietnam on the treatment of DL at the time of the study [8].

** Classification of dyslipidemia*

Classification of dyslipidemia was evaluated according to the ESC/EAS guidelines 2019 [7].

** Assess the patient's cardiovascular risk*

Assess the patient's cardiovascular risk was evaluated according to the ESC/EAS guidelines 2019 [7].

** Analysis of the necessary for drug therapy at the initiation of treatment based on LDL-C*

Analysis of the necessary for drug therapy at the initiation of treatment based on LDL-C was evaluated according to the ESC/EAS guidelines 2019 [7].

** Analysis of the decision to initiate treatment*

- Suitable

Initiation of drug treatment for DL was considered appropriate when one of the following conditions is satisfied:

- In patients with clinical manifestations of CVD, initiate statin therapy immediately to prevent secondary cardiovascular events regardless of baseline LDL-C level.

- In patients with no clinical manifestations of CVD:

+ For patients with TG levels ≥ 5.7 mmol/L, immediate treatment with a fibrate is required regardless of LDL-C concentration to prevent acute pancreatitis [8].

+ For patients with TG levels < 5.7 mmol/L, the decision to use the drug on an individual basis depends on the patient's risk, LDL-C concentration, and renal function at the time of initiation of therapy [7, 8]. Specifically: Patients are assessed for immediate statin initiation based on Table 2; Calculate the percentage of LDL-C that needs to be reduced to reach the target LDL-C level based on the patient's risk; Choose a statin with the right strength and dose to reduce this percentage; Adjust drug dosage according to liver and kidney function based on the eMC's drug leaflet.

- Not suitable: the treatment does not comply with the two guidelines above.

**** Evaluation of the effectiveness of blood lipid control based on LDL-C***

The effectiveness of controlling DL was assessed by reaching the target LDL-C threshold at each patient's follow-up visit. According to ESC/EAS 2019, the target LDL-C threshold for patients was prescribed as follows:

Table 2. Target LDL-C [7]

Patient group	Target LDL-C
Very high risk	< 1.4 mmol/L and reduced by at least 50% LDL-C
High risk	< 1.8 mmol/L and reduced by at least 50% LDL-C
Moderate risk	< 2.6 mmol/L
Low	< 3.0 mmol/L

**** Data analysis***

Collected data were processed using Excel 2019 and SPSS 20.0 software. For descriptive statistics, data were presented as percentages (%), mean ± SD. Paired Samples T-Test with a normally distributed sample or use the Wilcoxon test with a sample with a non-normal distribution or a sample size of less than 30 are used to compare the change in mean values of the same object. The difference was considered statistically significant if the significance level (p) < 0.05.

2.5. Results

The study "Assessment of drug use to treat dyslipidemia at military hospital 105" used a retrospective, descriptive, non-interventional analysis. A sample size of 277 patients was obtained at the beginning of the study.

2.5.1. Patient characteristics at the start of the study

**** Age and sex characteristics***

Table 3. Age and sex characteristics

Age group	Male		Female		Total	
	Number	***%***	***Number***	***%***	***Number***	***%***
18 - 45	40	14.4	14	5.1	54	19.5
46 - 59	64	23.1	57	20.6	121	43.7
60 - 74	49	17.7	51	18.4	100	36.1
75 - 90	1	0.4	1	0.4	2	0.7
Total	**154**	**55.6**	**123**	**44.4**	**277**	**100.0**
Average age	54 ± 11.2		59 ± 9.6		55.8 ± 10.9	
Minimum age: 21			Maximum Age: 81			

Among the study sample, there were 154 male patients, accounting for 55.6% and 123 female patients, accounting for 44.4%. The age group from 46 to 59 years old accounted for 43.7% of the sample. The average age of patients in the NC sample was 55.8 ± 10.9 years old. The youngest patient was 21 years old and the oldest patient was 81 years old.

**** Characteristics of patients' comorbidities in the sample***

Table 4. Characteristics of patients' comorbidities in the sample

Comorbidity status	Number	Percentage (%)
No comorbidities	103	37.2
Comorbidities		
Diabetes	32	11.5
High blood pressure	49	17.8
Coronary artery disease	53	19
Other	40	14.5
Total	277	**100.0**

Among 277 patients at the time of treatment initiation, the number of DL patients with comorbidities accounted for 62.8%. In which the proportion of patients with diabetes, hypertension and coronary artery disease accounted for 11.5%. 17.8% and 19%, respectively.

**** Classification of patients' DL at the beginning of treatment***

Table 5. Classification of patients' DL at the beginning of treatment

Classification	Number	Percentage (%)
Normal	10	3.6
Elevated cholesterol only	13	4.7
Elevated triglycerides only	13	4.7
Elevated lipid (both cholesterol and triglycerides)	241	87.0
Total	**277**	**100.0**

The number of patients with mixed hyperlipidemia accounted for the highest percentage (87%). The number of patients with hypertriglyceridemia and high cholesterol only were 4.7% and 3.6%, respectively. Patients did not belong to any subgroup and had normal plasma lipid levels however with a high risk of cardiovascular disease or a history of myocardial infarction.

Table 6. Classification of dyslipidemia according to the number of abnormal plasma lipid indexes

Classification	Male		Female		Total	
	Number	*%*	*Number*	*%*	*Number*	*%*
4 indexes	8	2.9	2	0.7	10	3.6
3 indexes	17	6.1	9	3.2	26	9.4
2 indexes	60	21.7	71	25.6	131	47.3
1 index	62	22.4	38	13.7	100	36.1
Normal	7	2.5	3	1.1	10	3.6
Total	**154**	**55.6**	**123**	**44.4**	**277**	**100.0**

Note: the indexes include: CT, LDL-C, HDL-C and TG.

Most of the patients had disorders of two or more indexes (60.3%). The proportion of patients with 1 abnormal index and normal indexes was 36.1% and 3.6%, respectively.

**** Patient's blood lipid index at the time of treatment initiation***

Table 7. Patient's blood lipid index at the time of treatment initiation

Blood lipid	Index (mmol/L)		
	Lowest value	*Highest value*	*Average ± SD*
Cholesterol	2.4	10.4	6.09 ± 1.21
LDL-C	0.66	6.6	3.76 ± 0.95
HDL-C	0.3	2.8	1.30 ± 0.37
Triglyceride	0.45	16.13	3.56 ± 2.76

The average blood lipids of the patients were all above the normal range. The average values of total cholesterol, LDL-C, HDL-C and triglycerides were all high.

**** Cardiovascular risk of the patient at the time of initiation of treatment***

Patients were evaluated for STI factors according to the SCORE scale of ESC/EAS 2019. The number of patients with high and very high cardiovascular risk accounted for the largest percentage (54.8%). The proportion of patients with low and moderate risk was 18.5% and 26.7%, respectively.

Table 8. Cardiovascular risk of the patient at the time of initiation of treatment

Risk level	Male		Female		Total	
	Number	***%***	***Number***	***%***	***Number***	***%***
Very high risk	70	25.3	34	12.3	104	37.5
High risk	21	7.6	27	9.7	48	17.3
Moderate risk	28	10.1	23	8.3	51	18.5
Low risk	35	12.6	39	14.1	74	26.7
Total	**154**	**55.6**	**123**	**44.4**	**277**	**100.0**

**** The starting dose of the patient's drug***

The starting dose for patients on Atorvastatin, Rosuvastatin and Atorvastatin + ezetimibe regimens were all 10 mg, with patients receiving Simvastatin 20 mg. Meanwhile, the average starting dose of pravastatin was 19.9 ± 1.0 mg/day and that of fenofibrate was 179.64 ± 26.6 mg/day.

Table 9. The starting dose of the patient's drug

Starting drug	Number (%)	Minimum dose (mg)	Maximum dose (mg)	Average ± SD
Statin only				
Atorvastatin	25 (9)	10	10	-
Pravastatin	181 (65.3)	10	20	19.9 ± 1.0
Rosuvastatin	20 (7.2)	10	10	-
Simvastatin	38 (13.7)	20	20	-
Fibrate only				
Fenofibrate	8 (2.9)	145	200	179.64 ± 26.6
Statin + ezetimibe				
Atorvastatin/Ezetimibe	5 (1.8)	10/10	10/10	-

**** Analysis of the necessary for the use of drugs at the time of initiation of treatment based on the LDL-C index***

The assessment on the need for medication in patients based on LDL-C and cardiovascular risk stratification according to the criteria of the ESC/EAS 2019 guidelines [4]. The results of assessing the necessity of using drugs to treat DM were presented.

The majority of patients (93.5%) needed to initiate treatment based on their LDL-C index. 6.5% of patients did not need to initiate treatment based on the LDL-C index (Table 10). In which, 1.5% of patients belong to the group of high and very high risk, accompanied by disorders of other blood lipid indices and comorbidities related to cardiovascular disease, diabetes. So the indication to initiate treatment in this group was reasonable.

Table 10. Analysis of the necessary for the use of drugs at the time of initiation of treatment based on the LDL-C index

Risk level	**The necessary of drug use based on LDL-C (mmol/L)**			
	Required		***Not required***	
	Number	*%*	*Number*	*%*
Very high risk	100	36.1%	4	1.4%
High risk	47	17.0%	1	0.4%
Moderate risk	45	16.2%	6	2.2%
Low risk	67	24.2%	7	2.5%
Total	**259**	**93.5%**	**18**	**6.5%**

**** Evaluation of the decision to initiate treatment***

Table 11. Evaluation of the decision to initiate treatment

The decision to initiate treatment	**Number**	**Percentage (%)**
Suitable	82	29.6
Not suitable		
Use statin on patients that should be on fibrate	39	14.1
Use fibrate on patients should be on a statin	2	0.7
Use statin at sub-optimum dosage	125	45.1
Use statin at a dose higher than it should be	29	10.5
Total	**277**	**100**

The majority of patients (70.4%) were prescribed drugs that did not meet the guidelines. In which, 45.1% of patients used statins with insufficient dosage; 14.1% indicated to use statins on patients who needed fibrate; 10.5% indicated to use statins with a higher dosage than necessary, and 0.7% indicated to use fibrates in patients requiring statins.

2.5.2. Evaluate the effectiveness and appropriateness of the drug treatment

** Changes in fasting blood lipids before and after treatment*

During the 3 months of follow-up, 114 patients were recorded with 149 follow-up visits who were assigned to be fully tested for specific lipid disorders as follows:

- Group 1: 25 patients with follow-up examination were re-tested at time T1;
- Group 2: 46 patients who were re-examined for testing at time T2;
- Group 3: 78 patients who were re-examined for testing at time T3.

Table 12. Changes in blood LDL-C indexes at the time

Group	LDL-C level						Change percentage before /after treatment	
	Before treatment			*After treatment*				
	Min	*Max*	*TB ± SD*	*Min*	*Max*	*TB ± SD*	*(%)*	*p*
Group 1 (n = 25)	1.1	4.77	3.53 ± 1.04	2	4.3	3.08 ± 0.64	–12.7	> 0.05
Group 2 (n = 46)	0.99	6.6	3.88 ± 1.14	0.56	5.2	3.23 ± 0.95	–16.8	< 0.05
Group 3 (n = 78)	0.66	6.02	4.11 ± 1.04	0.5	5.3	3.2 ± 1.15	–22	< 0.05

The results in Table 12 showed that after each time of drug use at T1, T2 and T3, the LDL-C indexes tended to decrease. Specifically, group 1 decreased by 12.7%; group 2 decreased by 16.8%; and group 3 decreased by 22%.

** Percentage of patients reaching treatment goals at time points based on LDL-C*

The proportion of patients reaching the treatment goal gradually increased over time. However, the percentage of patients reaching the treatment goal based on the LDL-C index at the time of testing was still very low.

Table 13. Percentage of patients reaching treatment goals at time points based on LDL-C

Group	Reaching target		Not reaching target	
	Number	*(%)*	*Number*	*(%)*
Group 1 (n = 25)	0	0	25	100
Group 2 (n = 46)	5	10.9	41	89.1
Group 3 (n = 78)	22	28.2	56	71.8

2.6. Discussion

2.6.1. Patient characteristics at the start of the study

The age of patients in the study sample was 55.8 ± 10.9 years old. The most common age in the sample was over 40 years old, accounting for 91%, of which the highest rate of patients was in the 46 - 59 age group, accounting for 43.7%. The age distribution in our sample focused mainly on the group over 45 years old. This was the common age for DL to be screened according to the recommendations of ESC/EAS 2019 [7]. The majority of patients with DL had comorbidities, which accounted for (62.8%). In which, 3 comorbidities were closely related to DL, namely diabetes, hypertension, and coronary heart disease. The rates were 11.5%, 17.8% and 19%, respectively. These were risk factors that were strongly associated with cardiovascular disease. ESC/EAS 2019 classifies patients with DL with diabetes, coronary heart disease, and hypertension (BP ≥ 180/110 mmHg) into the group of high to very high cardiovascular risk [7]. The simultaneous presence of one of the diseases such as coronary heart disease, diabetes, hypertension along with DL will make patients face a higher overall cardiovascular risk than patients with DL alone, particularly leading to increased atherosclerosis and increasing the risk of death for patients. The number of patients with very high and very high cardiovascular risk accounted for the largest percentage (54.8%) and the proportion of patients with low and moderate risk was 18.5% and 26.7%, respectively.

Regarding the characteristics of dyslipidemia, patients with mixed hyperlipidemia accounted for the highest proportion in the sample (87%), the proportion of patients with elevated triglycerides and elevated cholesterol only accounted for 4.7% each. Most of the patients in the sample had disorders of 2 or more indexes, accounting for 60.3%. 36.1% was the percentage for patients with 1 index disorder, 10 patients without any index disorder (3.6%). These 10 patients had normal lipid within according European Society of Cardiology classification. but these were patients in high-risk and very high-risk subjects with a history of myocardial infarction and therefore still received drugs to treat DL [7].

2.6.2. Characteristics of drug use of patients in the study sample

There were 3 groups of drugs used in the treatment of RLLPM, namely: statins, fibrates, and intestinal cholesterol absorption inhibitors (Ezetimibe).

Regarding the treatment regime. most of the patients were started with monotherapy (98.2%), only a small number of patients were treated with the combination regimen. This is completely consistent with the treatment principle of DL, which was to combine drugs only when monotherapy does not give the desired effect. Compared with national and international treatment guidelines, it was reasonable that the majority of patients were prescribed statins to reduce LDL-C and prevent cardiovascular events in our study [6, 8-11]. Statins were the most prescribed drugs in the initial treatment regime with a rate of 95.3%.

However, the starting dose for statin use is lower than the target dose in the treatment guidelines [1, 10]. The starting dose of statins in the study sample was low in the range from 10 to 20 mg. In which, the starting dose of all patients receiving Atorvastatin, Rosuvastatin and the combination Atorvastatin/Ezetimibe regimen was 10 mg, the starting dose for all patients receiving Simvastatin was 20 mg. Meanwhile, the mean starting dose of pravastatin was 19.9 ± 1.0 mg/day and that of fenofibrate was 179.64 ± 26.6 mg/day.

The LDL-C reduction potential of statin derivatives is dependent on statin intensity and dose. Therefore, the use of statins with insufficient dose/intensity to lower LDL-C as the target is not enough for patients to effectively reduce LDL-C as well as reduce cardiovascular events for patients.

The reduction in CVD risk was dose and intensity-dependent, with the lower the absolute LDL-C level, the greater the reduction in cardiovascular risk [12-16]. Therefore, it was necessary to consider risk factors, medical history, and LDL-C levels to decide the intensity and dose of the used drug.

2.6.3. Evaluation of the effectiveness and suitability of using drugs to treat DL

All patients needed to use drugs to treat DL at the start of the study. The rate of inappropriate treatment decisions by doctors is up to 70.4%. Most of the decisions about inappropriate treatment were since the drug is prescribed with an inappropriate dosage for the patient. In which, 45.1% of patients used statins with insufficient dosage, 14.1% indicated for patients to use statins instead of fibrates, 10.5% indicated to use statins with a higher dose than recommended, 0.7% indicated to use fibrates in patients who needed statins.

The number of patients who came to the clinic for follow-up and during follow-up were assigned to do blood lipid tests in the study sample was quite low, which was 114/277 patients came for follow-up visits and had tests down at T1, T2, T3. The cause of this situation is due to the doctors' habit and the limitation in the testing capacity of the hospital. Most patients were only ordered by the doctor to have 2 tests, which were Cholesterol and TG test even though LDL-C was the most important test index to evaluate the effectiveness of the treatment of Dislipidemia. In addition, patients who did not come to the clinic for follow-up visits or who did not comply with the doctor's instructions also contributed to a low number of patients who came to the clinic for follow-up visits and had full blood lipid tests (Cholesterol, TG, LDL-C, HDL-C).

The percentage of patients reaching the treatment goal based on the LDL-C index at the time of testing was still quite low with the percentage of patients reaching the treatment target LDL-C at the time points were respectively group 1 (0%). group 2 (10.9%) and group 3 (28.2%). The reason that the majority of patients do not reach the LDL-C treatment goal may be because the criteria for assessing the treatment goals in our study are stricter than those in the previous guidelines, making the rate of treatment patients reaching treatment goals was low. Specifically. according to the ESC/EAS 2019 guidelines, the treatment goals for LDC-C of patients with very high - high - moderate - low risk were as follows: 1.4 mmol/L; 1.8 mmol/L; 2.6 mmol/L, and 3 mmol/L

while according to the guidelines of the Vietnamese Cardiology Association and ESC/EAS 2016, the treatment goals of LDC-C of patients with very high - high - moderate - low UTIs were respectively, 1.8 mmol/L; 2.6 mmol/L; 3 mmol/L and 3.4 mmol/L [7, 8, 17]. Besides, the dose and drug intensity were not optimal, which was also one of the reasons leading to the treatment not reaching the target in our study sample, which accounted for a high proportion.

The current treatment to achieve the LDL-C target in the Asian population is still very limited [15, 18-21]. These patients were largely in the high- or very high-risk group, the higher the cardiovascular risk and the lower the odds of reaching the LDL-C-based treatment goal, so they were more likely to experience major cardiovascular events. Results from the Pan-Asia CEPHEUS trial (2012) conducted in Asian countries showed that up to 60% of patients with DL in Vietnam had not reached the target LDL-C level, in which 72.4% of them at very high risk did not reach the target LDL-C. This suggests that the higher the patient's CVD risk, the lower the percentage of patients reaching the treatment goal [21]. Another study conducted on 12.040 DL patients from 84 hospitals in 19 provinces in China (2013) showed that only about 25% of patients in the study achieved lipid targets and nearly 60% of patients in this study were identified as high or very high-risk groups. requiring strict control of blood lipid levels [22, 24]. Another study conducted on 4807 type 2 diabetic patients between the ages of 40 and 75 years old conducted at 20 endocrinology clinics in hospitals in China (2016) also showed that about 39.4% of the patient achieved the target LDL-C level (LDL-C < 2.6 mmol/L). In patients with a history of prior cardiovascular disease, the percentage of patients achieving the goal (LDL-C < 1.8 mmol/L) was only 15.3% [23].

Given a large proportion of DL patients who did not meet the ESC/EAS 2019 target levels in our sample. we found that more aggressive treatment of DL was necessary to achieve the goals established by ESC/EAS 2019, specifically:

- Adding drugs to treat DL such as the strong statin group to the list of drugs used at the hospital to increase the choice for doctors when prescribing.

- Consider more intense statin therapy or higher dose statins for patients at high and very high cardiovascular risk, or for whom a large percentage of LDL-C would need to be reduced to achieve the target to make primary and secondary prevention of cardiovascular events.

3. Conclusions

The study results showed that after three months of follow-up, the percentage of patients reaching the treatment goal was low (28.2%) according to the ESC/EAS 2019 target. Therefore, the more aggressive treatment for RLLPM was necessary to achieve the goals established by the ESC/EAS 2019 guidelines. Our research had contributed to clarifying the usage of drugs to treat dyslipidemia at military hospital 105 in general and outpatient department - Military Hospital 105 in particular, thereby giving made a number of recommendations to contribute to improving the quality and effectiveness of using drugs to treat dyslipidemia at the outpatient clinic of Military Hospital 105.

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