THE INFLUENCE OF PHARMACOTHERAPY WITH BETA-BLOCKERS AND CALCIUM CHANNEL BLOCKERS ON CARDIOVASCULAR RISK IN PATIENTS WITH STABLE ANGINA

Bei Diana Alina*, Moca Mădălina, Chereji Anca, Annamaria Pallag, Rahota Daniela

*University of Oradea, Faculty of Medicine and Farmacy, 37 Republicii Street, Oradea, Postal Code 410167, România, e-mail: diana_bei@yahoo.com

Abstract
*   Stable angina is a major cause of chronic morbidity and mortality worldwide. Besides a rational pharmacotherapy of disease requires a strict control of factorsdeterminants of risk and incidence of coronary heart disease.*
*   The present study is performed between 2010 - 2011, on a number of 161 patients with stable angina, with beta-blockers and/or calcium channel blockers in treatment. Risk stratification process is the next step after a diagnosis of stable angina patients framing involves a risk class, with the final aim to define optimal treatment options and determining prognosis. Score prediction grid offers 10 years of cardiovascular mortality and consider five risk factors: sex, age, smoking status, total cholesterol, systolic blood pressure.This data was calculated statistically and presented in results and discussion. After 12 months of treatment, in the context of changing living conditions improve lipid profile and blood pressure, most patients had moderate cardiovascular risk.*

Keywords: stable angina pectoris, cardiovascular risk, risk factors, risk estimation.

INTRODUCTION

The long-term prognosis of stable angina is variable, and the range of treatment options has expanded considerably from simple symptomatic control to potent and often expensive strategies to improve prognosis. When discussing risk stratification in stable angina, risk refers primarily to the risk of cardiovascular death, but the term is often more loosely applied to incorporate cardiovascular death and MI, or in some cases even wider combinations of cardiovascular endpoints(Fox K., M.A. Garcia, D.Ardisino et al, 2006, Braunwald's heart disease, 2008, Capalneanu R., 2010).

The process of risk stratification serves a dual purpose, to facilitate an informed response to queries regarding prognosis from patients themselves, employers, insurers, non-cardiology specialists considering treatment options for comorbid conditions and others, and secondly to assist in choosing appropriate treatment(Fox K., M.A. Garcia, D.Ardisino et al, 2006, Conroy R. et al, 2003, De Backer G. et al, 2003).

The SCORE risk assessment is derived from a large dataset of prospective European studies and predicts fatal atherosclerotic heart disease events over a ten year period(European Society of Cardiology, 2007,

Ginghină C., 2010, Conroy R., et al 2003, http://www.heartscore.org /Pages/ welcome.aspx).

This risk estimation is based on the following risk factors: gender, age, smoking, systolic blood pressure and total cholesterol (Conroy R.. et al 2003, http://www.heartscore.org/Pages/welcome.aspx).

The threshold for high risk based on fatal cardiovascular events is defined as "higher than 5%", instead of the previous "higher than 20%" using a composite coronary endpoint (Graham I., D. Atar, K. Borch-Johnsen et al, 2007, Conroy R. et al, 2003, http://www.heartscore.org/Pages/ welcome.aspx).

This SCORE model has been calibrated according to each European country's mortality statistics. In other words, if used on the entire population aged 40-65, it will predict the exact number of fatal CVD-events that eventually will occur after 10 years (Conroy R. et al, 2003, http://www.heartscore.org/Pages/welcome.aspx).

The relative risk chart may be used to show younger people at low total risk that, relative to others in their age group, their risk may be many times higher than necessary. This may help to motivate decisions about avoidance of smoking, healthy nutrition and exercise, as well as flagging those who may become candidates for medication. This chart refers to relative risk, not percentage risk.

Advantages in using the SCORE risk chart are : is an intuitive, easy to use tool ; takes account of the multifactorial nature of CVD , estimates risk of all atherosclerotic CVD, not just CHD;   allows flexibility in management—if an ideal risk factor level cannot be achieved, total risk can still be reduced by reducing other risk factors; allows a more objective assessment of risk over time; establishes a common language of risk for clinicians, shows how risk increases with age; the new relative risk chart helps to illustrate how a young person with a low absolute risk may be at a substantiallyhigher and reducible relative risk (Gherasim L. et al, 2004, Guideline on diabetes, pre/diabetes, and cardiovascular disease, 2007, http://www.heartscore.org/Pages/welcome.aspx).

MATERIAL AND METHODS

In the present study, 161 pacients of different sex and age between 40-60 years old with stable angina, hospitalized in Emergency County Hospital Oradea, in 2010-2011, were monitored under antianginal treatment. It formed three groups of patients:
- the first group including 67 patients age between 50-70 years which were monitored under antianginal treatment with selective beta-

blockers (Metoprolol 50-100 mg/day, Atenolol 50-100mg/day, Bisoprolol 5-10mg/day);

- the second group including 50 patients age between 50-70 years which were monitored under antianginal treatment with long-acting dihydropyridine calcium-channels blockers (Amlodipin 5-10 mg/day, Lercanidipin 10-20 mg/day, Nifedipin retard 20mg, 40 mg/day);

- the third group including 40 patients age between 50-70 years which were monitored under antianginal selective beta-blockers and long-acting dihydropyridine calcium channel blockers in the same time (Metoprolol 50-100 mg + Amlodipin 5-10 mg, Metoprolol 50-100 mg + Lercanidipin 10-20 mg).

General clinical and laboratory methods used in the present study were directed to three important aspects: investigate the influence of antianginal pharmacotherapy on cardiovascular risk, investigate the cardiovascular status, investigate the cardiovascular risk.

To each patient it was prepared a study sheet which, in addition to identification data, it was included a number of basic elements for structuring and description of study groups.

Score scale was used to assess the influence pharmacotherapy with beta-blockers and calcium antagonists and cardiovascular risk in patients with stable angina pectoris.

Statistical analysis was performed using EPIINFO application, version 6.0, program of the Center for Disease Control and Prevention - CDC (Center of Disease Control and Prevention) in Atlanta, adapted processing of medical statistics.

In this study we use the concept of relative risk (RR) phenomenon that is studied in terms of exposure or non-exposure to risk factors, which generally is considered as a quantification of the power of association between factor and disease.

RESULTS AND DISCUSSIONS

At initial assessment, only 8.7% of patients had low cardiovascular risk, mostly showing the percentage nearly equal, moderate and high risk (46.0% and 45.3%). After 12 months of treatment, in the context of changing living conditions (smoking cessation, the inactivity) and improve lipid profile and blood pressure, most patients had moderate cardiovascular risk (55.9%). Assessment of significant differences between initial and final regarding cardiovascular risk (p = 0.002) (table 1).

The evolution of cardiovascular risk-Score

	Group 1		Group 2		Group 3		Total	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%
Initially								
Low risk	6	9,0	4	8,0	4	9,1	14	8,7
Moderate risk	33	49,3	23	46,0	18	40,9	74	46,0
High risk	28	41,8	23	46,0	22	50,0	73	45,3
Averages	**5,35±1,22**		**5,59±1,17**		**5,75±1,41**		**5,53±1,33**	
12 months later								
Low risk	10	14,9	6	12,0	7	15,9	23	14,3
Moderate risk	39	58,2	27	54,0	24	54,5	90	55,9
High risk	18	26,9	17	34,0	13	29,5	48	29,8
Averages	**4,56±1,11**		**5,21±1,13**		**4,68±1,03**		**4,59±1,10**	
Effect Size	**-0,65**		**-0,32**		**-0,76**		**-0,70**	

The group with beta-blockers and Ca antagonists, both initial assessment most patients had increased risk (50.0%) and the final, most patients experienced moderate risk (54.5)(figure 1). After 12 months of treatment with beta-blockers and Ca antagonists, the percentage of low-risk patients increased by 6.8% (from 9.1% to 15.9%) and those at high risk decreased by 20 , 5% (from 50.0% to 29.5%)(figure 2). Assessment of significant differences between initial and final regarding cardiovascular risk (p <0.001).

Originally score score indicates an increased cardiovascular risk, the average is over 5 (5.53) and after 12 months the average score drops to 4.59 indicating a moderate cardiovascular risk.

After 12 months of treatment we recorded an effect size of -0.65 RR = the beta-blocker group (moderate effect), RR = -032 antagonists in the group with a (small effect) and RR = -0.76 (moderate effect) in the group with beta-blockers and Ca antagonists.
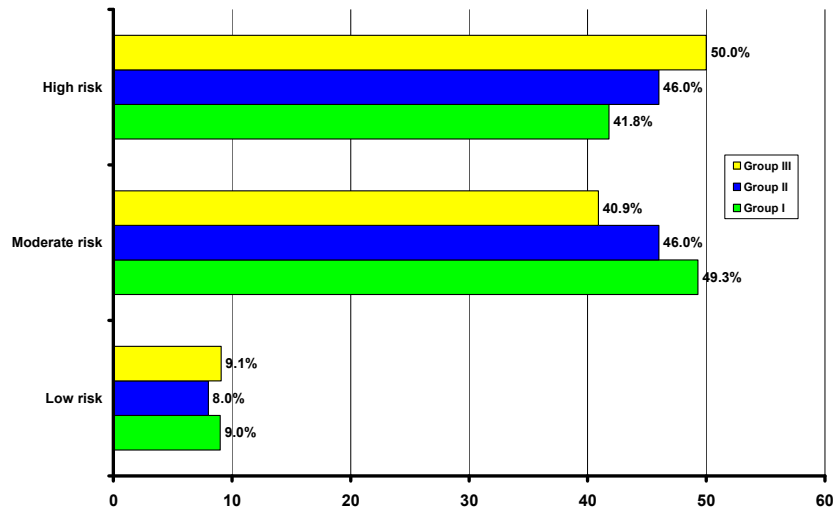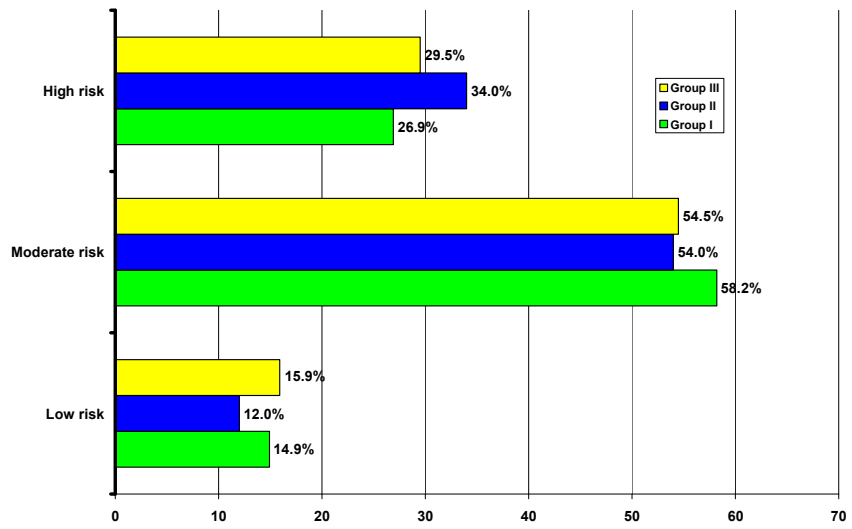
Figure 1. Innitially evaluation

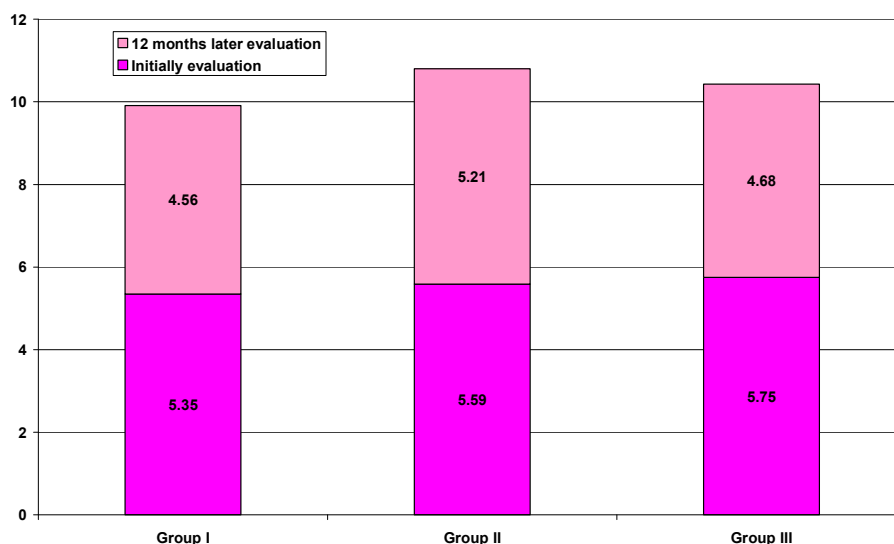*Figure 2. Evaluation after 12 months*

Figure 3. Average score change

The group with beta-blockers, both at initial assessment and at the end, most patients experienced moderate risk (49.3% and 58.2%)(figure 1). After 12 months of treatment with beta-blockers in patients with low risk rate increased by 5.9% (from 9.0% to 14.9%) and those at high risk decreased by 14.9% (from from 41.8% to 26.9%). Assessment of significant differences between initial and final regarding cardiovascular risk (p = 0.003)(figure 2) .
In the group with antagonists both at initial assessment and at the end, most patients experienced moderate risk (46.0% and 54.5%)(figure 1). After 12 months of treatment with antagonists of Ca, percentage of patients with low risk increased by 4.0% (from 8.0% to 12.0%) and those at high risk decreased by 12.0% (from 46.0% to 34.0%)(figure 2). Assessment of significant differences between initial and final regarding cardiovascular risk (p = 0.031)(figure 3).

CONCLUSIONS

The priorities defined in this study are very important for clinical use and reflect the fact that those at highest risk of cardiovascular disease event gain most from preventive measures. This approach should complement public actions to reduce community risk factor levels and promote a healthy lifestyle.

Estimation of total risk remains a crucial part of the present study. The SCORE scale has been updated with an estimate of total CVD risk as well as risk of CVD death. Information on relative as well as absolute risk is added to facilitate the counselling of younger persons whose low absolute risk may conceal a substantial and modifiable age-related risk.

In cardiovascular risk estimation using grid Score, we found significant differences between initial and final evaluation in the study groups. Originally score indicated an increased cardiovascular risk, an average value of 5.53 and after 12 months of treatment change score indicating a moderate cardiovascular risk with an average of 4.59, with no significant differences between the three groups.

REFERENCES

1. Al Patrulea grup de lucru al Societății Europene de Cardiologie: Ghidul European de Prevenție a bolilor Cardiovasculare în Practica Clinică, 2007, Jurnal European de Cardiologie preventivă și recuperare cardiovasculară,14:E9-E24,S73-S82
2. Braunwald's heart disease,2008, a text book of cardiovascular medicine, 8-th edition, Libby P, editor Saunders; pp:1167-1194
3. Capalneanu R.,2010, Boala cardiacă ischemică,București, Editura Media Med Pubicis; ISBN 978-606-92489-0-4
4. Conroy R, K. Pyö¨ra¨la¨, A.P. Fitzgerald, S. Sans, A. Menotti, G. De Backer, D. De Bacquer, P. Ducimetie`re, P.Jousilahti, U. Keil, I. Njølstad, R.G. Oganov, T. Thomsen, H. Tunstall-Pedoe, A. Tverdal, H. Wedel, P. Whincup, L. Wilhelmsen, I.M. Graham, 2003, SCORE project group. Estimation of ten-year risk of fatal cardiovascular disease in Europe: the SCORE project. Eur Heart J;24; pp:987–1003
5. De Backer G, E. Ambrosioni, K. Borch-Johnsen, C. Brotons, R. Cifkova, J. Dallongeville, S. Ebrahim, O. Faergeman, I. Graham, G. Mancia, V. Manger Cats, K. Orth-Gome´r, J. Perk, K. Pyö¨ra¨la¨, J.L. Rodicio, S. Sans, V.Sansoy, U. Sechtem, S. Silber, T. Thomsen, D.Wood, 2003, Third Joint Task Force of European and Other Societies on Cardiovascular Disease Prevention in Clinical Practice. European guidelines on cardiovascular disease prevention in clinical practice. Third Joint Task Force of European and other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of eight societies and by invited experts).Eur J Cardiovasc Prev Rehab;10(Suppl 1):S1–S78
6. Dorobanțu M., A. Fruntelată, M. Rugină, Grupul de lucru de Cardiopatie ischemică, 2008, Actualități în stratificarea riscului în sindroamele coronariene acute fără supradenivelare de segment ST şi implicațiile terapeutice, Progrese în cardiologie , Media Med Publicis; pp:331-357
7. European Society of Cardiology and other societies on cardiovascular disease, 2007, Prevention in clinical practice (constitute by representative of nine societies and by invited experts), Eur J Cardiovascular Prev Rehabil; 14 (Suppl.2): S1-S113
8. Fox K., M.A. Garcia, D.Ardisino et al. 2006, The Task Force on the Management of Stable Angina Pectoris of the European Society of Cardiology. Guidelines on the management of stable angina pectoris. Full text. European Heart Journal;
9. Ginghină C.,2010, Mic tratat de cardiologie, Ed. Academiei Române;pp:38-139
10. Gherasim L., 2004, Angina pectorală. Bolile cardiovasculare şi metabolice. Medicină Internă. Ediția a-2-a revizuită, Ed. Medicală, partea I; pp:767-822

11. Graham I, D. Atar, K. Borch-Johnsen, 2007, European guidelines on cardiovascular disease prevention in clinical practice: full text. Fourth Joint Task Force of the European Society of Cardiology and other societies on cardiovascular disease prevention in clinical practice (constitute by representative of nine societies and by invited experts). Eur J Cardiovascular Prev Rehabil: 14 (Suppl.2): S1-S113

12. Guideline on diabetes, pre/diabetes, and cardiovascular disease, 2007, executive summary. The Task Force on Diabets and Cardiovascular Diseases of the European Society of Cardiology(ESC) and of the European Association for the Study of Diabetes (EASD). In European Heart Journal, 28; pp:88-136

13. Mancia G., 2007, Guidelines for the Management of arterial Hypertension-The Task Force for the Management of Arterial Hypertension and the European Society of Hypertension and the Society of Cardioloy. Eur. Heart. J.: 28(12); pp:1462-1536

14. http://www.heartscore.org/Pages/welcome.aspx