Reducing Global Risk of Ambulatory Assisted Hypertensive Patients – What Could Be Changed in the Practice of a Romanian Preventive Ambulatory System According to New Dyslipidaemia Guidelines?

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Reducing the total cardiovascular risk of hypertensive patients is one of the basic targets in hypertension management. A good lipid control is a major contributor of the global risk reduction.

Purpose: To simulate the impact of the ESC/EAS 2011 guidelines for the management of dyslipidaemias on the lipid management practice of a preventive profiled ambulatory cardiology system.

Methods: The study included all the 7413 hypertensive patients examined between 2002–2011 in a preventive ambulatory system. As a part of the simulation patients were stratified to risk categories according to ESC 2011 guidelines. We compared the frequency of prescribed cholesterol lowering medication with that theoretically indicated based on the new guidelines. The study is based on a retrospective simulation of the theoretical effects of the implementation of the new guidelines in a real patient population.

Results: Risk stratification could be performed in 78.74% of the population. Patients were stratified to very high risk 74.82%, high risk 1.96%, moderate risk 8.66%, and low risk 14.56%. Cholesterol lowering treatment was prescribed for 39.58% of the patients. Very high risk patients were treated more frequently (48.8%), than high (37.0%), moderate (26.5%), or low (16.4%) risk patients. According to the new ESC guidelines theoretical indication for cholesterol lowering treatment has been for 52.07% (3860) of patients. The analysis of the yearly trends in prescribing cholesterol lowering drugs showed an increase from 0% in 2002 to 52.7% in 2011.

Conclusions: A yearly improving trend can be observed in the frequency of indicating cholesterol lowering drugs. The future implementation of the new guideline has the potential impact to assure cholesterol lowering medication indication for another 1980 patients in our sample.

Keywords: hypertension, cholesterol, control rate

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Introduction

Hypertensive patients represent a large group of patients at risk for major cardiovascular events. The main target in the management of these patients is the reduction of global cardiovascular risk. Blood pressure lowering cannot remain the exclusive intervention for global risk reduction [1]. Treatment of associated risks also is very important. The association of dyslipidaemia is very frequent in this patient population. A good lipid control can have an important contribution to global cardiovascular risk reduction.

The European Society of Cardiology released in 2011 a guideline for the management of dyslipidaemias. These guidelines stated clear indications for lipid lowering medications depending not only on the LDL cholesterol values but mainly on the global risk stratification of the patients [2]. As a part of the European Union, Romania adopts European guidelines at national level. These guidelines are meant to change actual drug prescribing habits at national level, in order to translate the benefits of actually accumulated knowledge into cardiovascular mortality and morbidity reduction for a large number of patients. Applying these guidelines in clinical practice at a population level has a certain impact that can be simulated using electronic patient records.

The purpose of our study was to determine the possible future impact of the ESC/EAS 2011 guidelines for the management of dyslipidaemias on the lipid management practice of a preventive profiled ambulatory cardiology system, based on a retrospective simulation – what would have been supposed to happen if these guidelines were applied for patients assisted in the previous 9 years interval.

Material and method

The study included all the 7413 hypertensive patients examined between 2002–2011 in the Procardia preventive ambulatory center in Tîrgu Mureș, Romania. The sex distribution of the studied patients was 45.26% male average age 57.8±13.1 years, and 54.26% female average age 61.6±12.9 years.

Characteristics of the studied population are summarized in Table I.

Patients received individually tailored lifestyle advice and drug treatment targeting the reduction of global cardiovascular risk according to the clinical judgment of the treating physician.

In order to study the theoretical consequences of applying the ESC 2011 guidelines on a concrete population we

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Table I. Average risk factor level of the studied patients

	N	Min	Max	Mean	SD
Age (years)	7413	16	95	59.54	13.02
Total cholesterol (mg/dl)	4334	42	560	205.61	47.61
LDL (mg/dl)	2677	33	351	132.11	42.57
HDL (mg/dl)	2861	13	112	44.91	13.49
Triglyceride (mg/dl)	4283	30	2420	149.54	109.41
Fasting glucose (mg/dl)	4358	60	303	100.75	29.41
Height (cm)	6759	147	199	164.31	11.63
Weight (Kg)	6774	34	170	78.35	15.43
BMI	6740	15	49	21.32	4.44
Systolic BP (mmHg)	6562	90	250	146.34	21.34
Diastolic BP (mmHg)	6562	50	150	87.97	11.94

made a retrospective simulation of what should have been happened if these patients were had been treated according to these new recommendations. We compared the frequency of prescribed cholesterol lowering medication with that theoretically indicated based on the new guidelines.

As a part of the simulation patients were stratified to very high, high, moderate and low risk categories according to ESC 2011 guidelines for the management of dyslipidaemias. We considered according to the guidelines that cholesterol lowering treatment is compelling in very high risk group when LDL >70 mg%, respective in high risk group when LDL >100 mg%. These indications were not considered exclusive ones, some patients may have had other reasons for the introduction of lipid lowering medications according to individual clinical judgment.

We used "MedPrax" integrated patient data management system as an electronic health record. All data was recorded during current patient examinations. Because of the descriptive nature of the results, no statistical test was applied to the data collected. Data analysis was performed with the SPSS program.

Results

As a part of the simulation, in order to assess the indication for lipid lowering medication patients needed to be stratified in a risk category according to ESC 2011 guidelines for the management of dyslipidaemias. Risk stratification could be performed in 78.74% of the population. Missing data means most frequently the absence of cholesterol values in the electronic patient record or the absence of recorded smoking status. Patients presenting in the specialized ambulatory had frequently established cardiovascular disease (coronary heart disease, cerebrovascular disease, or peripheral artery disease) and diabetes was also a frequent risk condition as seen in Table II.

These patients were considered as belonging to the very high risk category.

Table II. Frequency of cardiovascular diseases and diabetes in the studied population of hypertensive patients

Cardiovascular disease	N	Percentage
Coronary heart disease	2526	34.1%
Cerebrovascular disease	812	11.0%
Peripheral artery disease	810	10.9%
Combination of any 2 above	658	8.9%
Combination of all 3 above	116	1.6%
Overall patients with CVD	3258	43.9%
Diabetes mellitus	1315	17.7%

The 10 year global cardiovascular risk was calculated according to the Score equations. Patients already classified in the very high risk category because of the presence of cardiovascular disease were not included in the Score risk calculation. According to the Score risk patients were included in the very high (>10% risk), high (5–10% risk), moderate (1–5% risk) and low risk (<1% risk) categories.

Finally a number of 5094 patients were stratified to very high risk 74.82% (3812), high risk 1.96% (100), moderate risk 8.66% (441), and low risk 14.56% (742).

The number of patients with prescribed cholesterol lowering medication was 2934 (39.58%). Very high risk patients were treated more frequently (48.8%), than high (37.0%), moderate (26.5%), or low (16.4%) risk patients.

According to the new ESC guidelines, taking into account only the compelling indications for cholesterol lowering treatment above LDL >70 mg% in very high risk, and LDL >100 mg% in high risk patients, in the future will be indicated cholesterol lowering treatment for 3860 patients. If we add to these patients those with a prescribed cholesterol lowering drug for other reasons than these compelling indications, we can conclude that 4914 patients will need cholesterol lowering medication. That means that in our studied population of 7413 patients an additional 1980 (26.7%) will need cholesterol lowering medication – every fourth patient getting no prescription of a cholesterol lowering drug needs to get one after the application of these new guidelines.

The analysis of the yearly trends in prescribing cholesterol lowering drugs for patients with compelling indication according to the new guidelines were as seen in Table III.

Discussions

Our study analyzes the possible future impact of a new guideline, published in 2011 on the everyday practice of a preventive profiled specialized ambulatory system. For this reason we made a simulation using the data from the electronic health record of our patients and calculated what

Table III. Yearly trends in cholesterol lowering drug prescription for patients with compelling indication according to the ESC2011 guidelines

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
% Medication prescribed for patients with compelling indication	0.0%	20.0%	37.2%	43.0%	46.9%	51.0%	54.5%	52.0%	57.2%	52.7%

should have been theoretically happened if the new guidelines were have been implemented in the former 9 years period.

Although the guideline had not been published in the past, when patient consultations were carried out, but the principles included in these guidelines were already known – patients with established cardiovascular disease, diabetes and high global risk, had been advised for a more aggressive lipid lowering attitude, including cholesterol lowering medication than patients with low global risk.

The control of blood pressure and blood lipid levels in clinical practice is a worldwide problem, even in well organized healthcare systems. Patients often are not treated, and even those treated, are not reaching treatment targets established in practice guidelines [3,4].

A recent (2010) Austrian study approaching the target cholesterol level achievement in statin- treated patients shows that 59.1% had above-target total cholesterol levels [5].

The Euroaspire I, II and III secondary prevention surveys demonstrate that the prevalence of elevated total cholesterol (>4.5mmol/l) had decreased substantially: 94.5%(1996), 76.7%(2000), and 46.2%(2007). However, 42,7% of patients on lipid-lowering medication in the Euroaspire III survey had not reached the total cholesterol goal. Data of the three Euroaspire studies reported from Hungary, a country facing similar historical and social problems as Romania, showed a decreasing prevalence of patients with total cholesterol level 5.5 mmol/l or higher from 60% to 24%, however 57% of patients did not reach the target level (4.5 mmol/l) although 80% of patients were treated with lipid lowering drugs [6].

These data supports the need for prescribing lipid lowering agents more frequently and in higher doses than it was prescribed in the past.

Eastern European healthcare systems confront with a low grade of patient education, and a relatively high cost of lipid lowering treatment reported to patient income. In the last 5 years we assisted to the appearance of generic statins on the market, which lowered the costs of lipid lowering therapies. The effect of these changes appeared in the higher frequency of indicated statin therapy in the clinical practice.

Our study illustrated the possible future impact of a new ESC guideline on a large population of hypertensive patients assisted in a preventive profiled ambulatory cardiology center. Principles of the new guidelines were formerly known and applied in clinical practice – very high and high risk patients had been more frequently treated with cholesterol lowering medication than moderate and low risk patients.

The implementation of the new guideline requires a more frequent prescription of cholesterol lowering agents in clinical practice, which meant in our study population an additional prescription of a lipid lowering agent for every fourth patient assisted. The application of the new guideline is targeting to prevent the progression of existing and the development of future cardiovascular diseases. Pharmaceutical companies producing lipid lowering agents could be motivated in a partnership for the application of the new guideline's recommendations.

The current use of electronic patient records made available data for retrospective analysis and made possible to simulate the potential impact of a new guideline.

Conclusions

1. As a result of implementation of electronic patient records, and personal quality assurance efforts, the activity of the studied cardiology ambulatory provided data for risk stratification in the majority of hypertensive patients.
2. A yearly improving trend can be observed in the frequency of indicating cholesterol lowering drugs.
3. According to the new guideline cholesterol lowering medication has to be indicated for another 1980 patients in our sample (26.7%).
4. Every fourth hypertensive patient without a cholesterol lowering medication in our ambulatory should have a drug prescribed in the future according to the new guidelines.
5. The application of the new guideline has the potential effect to further increase the number of hypertensive patients benefiting of a cholesterol lowering medication, contributing to a further improvement in the global cardiovascular risk of these patients.

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