A Study of Hypertensive Crisis and Precipitating Factors

A. Ali Rafighdoost MD, M. Shabestari MD, and T. Bostani MD

Abstract

Background- Hypertension is the most prevalent controllable lethal disease in the present century and is one of the most common causes of visits in private offices and general clinics.[1,2] In our region, no extensive study has been done on the incidence and precipitating factors of hypertensive crisis in patients with primary hypertension. Given the very large number of patients referring for this reason to Mashhad and especially in Imam Reza (A.S.) Hospitals, this study was conducted with the aim of determining the incidence of hypertensive crisis and its precipitating causes and proposing plans to control these factors.

Methods- A prospective study was done on hypertensive patients referring for hypertensive crisis in the cardiac emergency room of Imam Reza (A.S.) Hospital during an 18-month period from August 2002 to March 2004. By definition, a diastolic blood pressure of 140 mmHg or higher was set for choosing patients, and on this basis 192 patients entered the study. Study subjects were selected from patients aged 30 to 75 years, and an effort was made to ensure that all the subjects had primary hypertension.

Results- Among the 192 patients, males comprised the higher percentage. Hypertensive crisis occurred most commonly in patients aged 50 to 60 years, followed by those above 70. 75% of the patients had stopped taking medications for a long time, and the most common reasons for this were a feeling of improvement, growing tired of the long-run medications, being on a journey with the drugs left at home, and side effects, respectively. This study proved emotional stress and diet changes, especially taking excess salt, as important precipitating factors.

Conclusion- Hypertension is an important threat to general health in the developed countries, and has the characteristics of being common, asymptomatic, and easily detectable and treatable. A potentially fatal complication of hypertension is hypertensive crisis. This study was conducted with the aim of determining the incidence and the causes of hypertensive crisis and proposing ways to prevent its occurrence. It is recommended that the drugs should be taken life-long and not stopped without doctor's permission. The patients should be careful to take along their medications on trips and to continue to observe a low-salt diet ***(Iranian Heart Journal 2006; 7 (4):31-36)***.

Key words: hypertensive crisis■ primary hypertension■ stress ■ anti-hypertensive drugs

Hypertension is the most common treatable lethal disease in the present century,[1] and based on the available statistics, is one of the most common causes of referrals to private practices and clinics in the USA and probably other countries.[2]

Regarding the high prevalence of hypertension and its spread, its diagnosis and treatment is not confined to a specific specialty. All physicians, especially general practitioners, are expected to be able to manage and control the disease because

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From the Department of Interventional Cardiology and Vascular Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
Correspondence to: Mahmoud Mohammad Zade Shabestari, M.D, Mashhad, Iran Tel: +98 915 317 6436 Email: mtalaei@erh.ir

appropriate treatment will lead to a remarkable decrease in lethal and non-lethal complications.[3]

Several studies on the problem have been done worldwide. There are many cultural and diet-related factors that can affect the disease course and its treatment.[3] For example, a leading cause of hypertensive crisis in western countries is cocaine abuse among young adults, which leads to substantial mortality annually.[4]

Primary objective

As explained above, effector variables differ substantially in western countries as compared to our country. This fact prompted us to design a study on the various factors which precipitate hypertensive crisis.

Methods

This was a prospective study done on patients referring for hypertensive crisis in the cardiac emergency ward of Imam Reza (A.S.) Hospital from August 2002 to March 2004.

By definition, hypertensive crisis denotes cases which have a diastolic blood pressure of 140 mmHg or higher. The patients, referring for hypertension, were carefully examined and their blood pressure was carefully measured. Those who had a diastolic blood pressure of equal to or higher than 140mmHg entered the study.

Normally, hypertensive crisis can manifest in two ways: one comprising cases with end organ damage (emergency) and the other consisting of those with only diastolic hypertension, without end organ complications (urgent). In this study, cases of both groups were involved, for the main objective was detecting the causes.

Patients below age 30 years and those above 75 were excluded to ensure removing any possibility of secondary hypertension. Of the patients aged 50 to 75, only those whose hypertension was diagnosed before the age of 50 were selected,[5] so many patients were excluded.

Overall, 192 cases who met all the above criteria were studied. All the possible factors that could affect blood pressure measurement were taken into consideration,[6] and a standard mercury sphygmomanometer was used for measurements.

Results

Of the 192 patients with hypertensive crisis, 55% were male and 45% were female (Fig. 1).

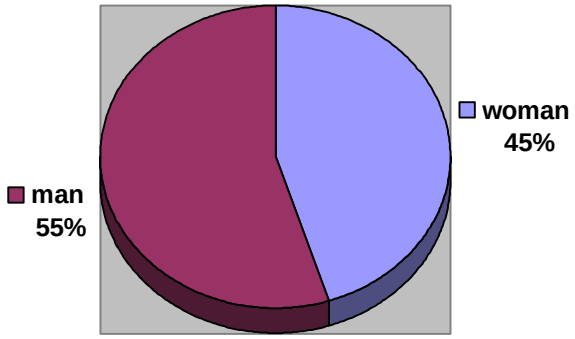

Fig. 1. Hypertensive crisis and gender

Most cases were seen in patients aged between 50 and 60 years and in those above the age of 70, with a decrease between the ages 60 and 70, creating a bi-modal curve (Fig. 2).

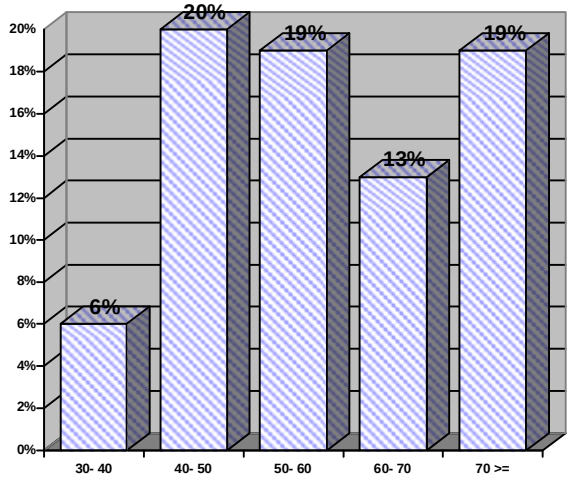

Fig. 2. Hypertensive crisis and age

75% of the patients (140 cases) had stopped taking medications for a long time before the visit, and only 25% (52 persons) had continued taking medications (Fig. 3).

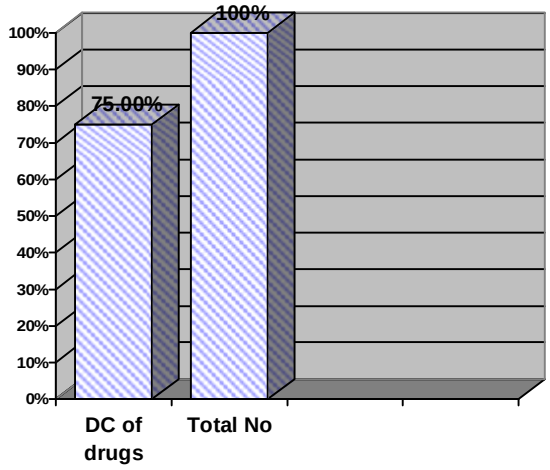

Fig. 3. Relation between hypertensive crisis and discontinuing of drugs.

The most common reasons for stopping medications were: feeling of improvement (45%), growing bored (36%), traveling without having taken the medications (11.63%), and side effects (0.64%, Fig. 4).

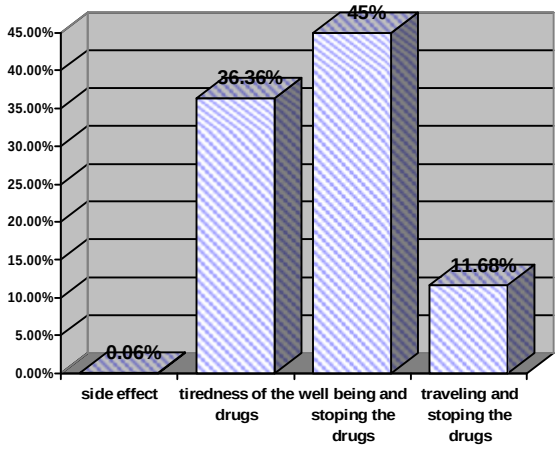

Fig. 4. Reasons for stopping medications.

Other factors leading to crisis included sudden stress in 48% (Fig. 5) and poor dietary compliance, especially salt-related in 68.83% (Fig. 6).

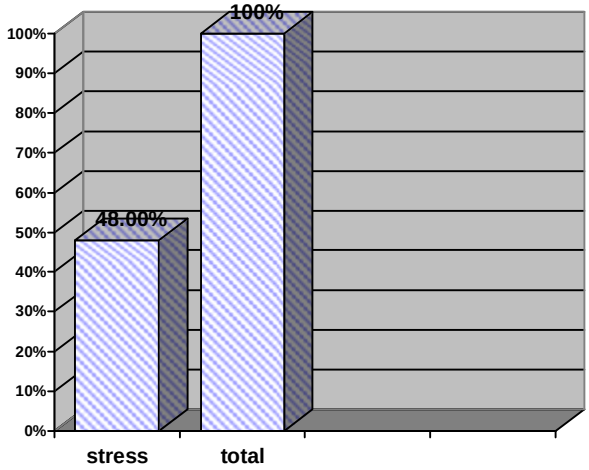

Fig. 5. Stress in hypertensive crisis.

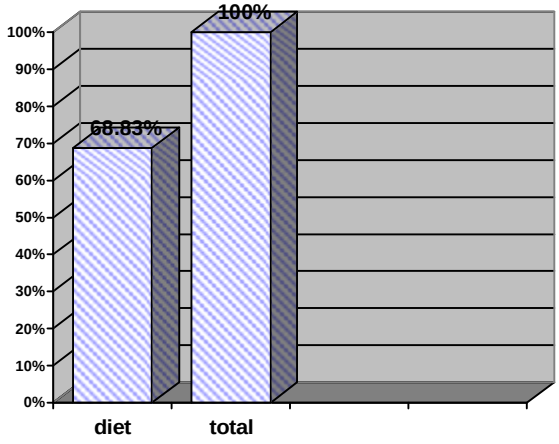

Fig. 6. Hypertensive crisis in dietary non-compliance.

The most common medications taken by the patients included diuretics (mostly triamterene-H), nifedipine, β-blockers, ACEIs, and methyldopa.

Only 25% of the patients had been consulting a cardiologist or internal medicine specialist, and the remaining 75% were being treated by general practitioners.

Discussion

This study showed hypertensive crisis to be less common in females than in males. This finding conforms with similar worldwide findings and can be explained by the fact that hypertension is less common in women, especially in pre-menopausal ages.[1] On the other hand, the rate of complications is also lower in women,[8] probably because the risk factors are more common in men. Women also tend to be more careful about their health and tend to take medications regularly.

This crisis was shown to be most common in the 50-60-year age group.

The incidence decreased in ages 60-70 and peaked again after 70. This finding can be explained with regard to the fact that arterial hypertension is prevalent in ages 50-60, so the incidence of the crisis can be expected to be higher in this group. This completely agrees with world-wide statistics.[1,2]

The second peak after age 70 can be explained by the extensive atherosclerosis in this age period. Nevertheless, a study on 1670 patients aged over 80 with hypertension showed a remarkable decrease in cardiovascular complications, with a 34% decrease in stroke incidence and 24% fall in heart failure.[9,10] However, further studies are required to prove this finding.

This study showed discontinuing of medications to be of utmost importance in precipitating hypertensive crisis. 75% of the subjects had stopped medications and only 25% had continued them. This finding has also been proven in other worldwide studies. Other studies in medical literature note side effects, high drug cost, high doses, poor training, and memory problems as the common causes for discontinuing medications; none of them take account of patients traveling without their medications. In our study, more than 11% of the cases had stopped their medications because they were on a trip without having taken their medications along.

Another reason for stopping the drugs in this study was getting bored, which can be a result of high doses or frequent doses, and more than 36% of our patients had stopped taking medications for this reason. Another significant finding in our study was feeling of improvement as a reason for discontinuing medications, which can be caused by poor patient training about the significance of the problem.

Medication side-effects resulted in only 0.06% of drug discontinuation cases and were primarily seen in multi-drug regimens. The introduction of new and effective medications and better patient education has led to a decrease in this problem.

Other factors which were proven as precipitating factors for hypertensive crisis were stress (48%) and dietary non-compliance, especially taking excess salt (68.83%). The role of these two factors in precipitating hypertension or hypertensive crisis has well been established.[7] Because this study was done in a religious city visited by millions of pilgrims yearly, the travel stress and difficulty with diet could have been very important factors.

Conclusion

Increased population growth rates and improved life expectancy have led to an increase in the number of hypertensive patients in the USA and other developed and developing countries. Although extensive cardiovascular complications have been shown to accompany uncontrolled hypertension, unfortunately most patients remain untreated or under-treated.[2,7,10] Because of this, the risk of cardiovascular complications still remains high.[9,10]

Research shows that about 1% of hypertensive patients contract hypertensive crisis,[11,12] which could be a life-threatening event. This fact, along with the importance of some specific measures including diagnosing hypertensive patients, early establishment of treatment, patient education, and also the

good response of most cases to treatment with reduced side effects, made us plan a research into the causes of hypertensive crisis in the Iranian population.

The majority of patients who face the crisis are those who have stopped taking medications for a variety of reasons. Therefore, educating patients and making them aware of the consequences of discontinuing medications have led to a decrease in morbidity and mortality. Patients should be advised that a feeling of improvement after taking medications does not mean permanent cure and the need for the medications still persists. They should also be warned that drug discontinuance may cause sudden life-threatening events. It should also be made clear that a lack of sense of improvement dose not necessarily mean inappropriate response to treatment and should not discourage patients. Patients should be advised to continue medications for their entire life and that a discontinuance or even reduction in dose should not be made without the permission of the attending physician.[13,14]

The patients should be told to take their medications with them when traveling, or if they their drugs are not available for any reason, they should obtain them immediately. There have been many cases of fatal hypertensive crisis caused by this simple oversight.

Another important piece of advice to be given is to avoid physical and emotional stress and to observe a well-balanced diet, especially when traveling.

In summary, hypertension is one of the important general heath problems in developed countries.[15] Its characteristics include being quite common, asymptomatic, easily diagnosed and easily treatable, as well as being fatal if not treated properly.

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