Short Communication

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Evaluation of Clinical Characteristics of Patients with Non-Traumatic Subarachnoid Hemorrhage

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ABSTRACT

BACKGROUND AND OBJECTIVE: Subarachnoid hemorrhage (SAH) is a common and horrible disease and high rate of neurological complications. Misdiagnosis leads to increased mortality and delayed onset of treatment. This aim of study was to investigate the clinical characteristics of patients with SAH in Mazandaran.

METHODS: This research is descriptive and retrospective study on 110 non-traumatic SAH. Variables include age, sex, headache, swallowing disorder, speech impairment, syncope, hemiplegia, seizure, nausea and vomiting, as well as risk factors such as hypertension(HTN), diabetes(DM), hyperlipidemia(HLP), alcohol consumption, smoking, Ischemic heart disease(IHD) was extracted from the patients file.

FINDINGS: The mean age of patients was 53±16.92 years. The most common non-traumatic SAH in the age group over 40, especially 40 to 60 years. The average hospital length of stay was 14.7±4.77 days. Hypertension (47.3%) is highest prevalence in the study population compared with other risk factors include DM,HLP,IHD,smoking,alcohol consumption and the headache was 80% and hemiplegia was 11.8%.

CONCLUSION: All patients with sudden headaches, especially headaches that have a history of hypertension must be accurate and complete evaluation for SAH.

KEY WORDS: *Headache, Hypertension, Subarachnoid Hemorrhage*.

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Introduction

Subarachnoid hemorrhage (SAH) is a common and unpleasant disease that involves 5% of strokes (1). The most common occurrence is between 35 and 65 years of age, and is most common in Japan and Finland (2). Despite many advances in diagnostic and therapeutic areas, there are many neurological complications in this disease (3). The most common side effects of this disease include recurrent hemorrhage, vasospasm and stroke, and acute hydrocephalus (4).

Despite the decline in mortality in the disease from more than 50% to approximately 35%, the mortality rate is still significant (5). In addition to the classic symptoms of the disease, there are numerous abnormalities in the disease, which leads to confusion in the correct diagnosis of the disease (9-6). Incorrect diagnosis increases the mortality and delayed onset of treatment (10). Studies show that about 12% of SAH cases are diagnosed as false (11,10). Therefore, the exact recognition of the characteristics of the disease in each region is essential. Due to local and regional differences and also, lack of sufficient information about this disease in Mazandaran province in order to improve the quality of health services, in this study, the epidemiologic and clinical characteristics of patients with SAH were evaluated, so that an appropriate assessment could be made in dealing with patients who referred to the emergency department with headache.

Methods

This cross-sectional and retrospective study was approved by the Ethics Committee of Mazandaran University of Medical Sciences with IRRAM 1265.94 IR. MAZUMS.REC and information in archival files and records of non-traumatic SAH patients who were admitted to educational and therapeutic centers of Mazandaran University of Medical Sciences from 2008 to 1394 were used. The diagnosis of SAH was done by a neurologist based on clinical symptoms and confirmed by CT scan or cerebrospinal fluid test and angiography. All patients with definitive diagnosis entered the study.

The cases of SAH due to coagulation dysfunction and trauma were excluded from the study. In this study, 110 patients with non-traumatic SAH as a census method were enrolled in the study. All of the individual data and clinical features and epidemiologic parameters including age, sex, headache, swallowing disorder, speech impairment, syncope, hemiplegia, seizure, nausea and vomiting, as well as risk factors such as hypertension, diabetes, hyperlipidemia, consumption Alcohol, smoking, ischemic heart disease (IHD) were extracted from the patient records. Then they entered in a comprehensive and complete questionnaire. In this study, blood pressure was considered higher than 140.9 mmHg, which was at least three times repeated, or a history of antihypertensive treatment as a blood pressure disorder (12). The benchmark for diabetes was a fasting blood sugar greater than 140 mg/dl (13).

Increased cholesterol level higher than 200 mg/dl was considered (14). The history of smoking was also the regular use of cigarettes one year before the onset of bleeding. The severity of the SAH was determined according to the Hunt and Hess criteria (15). The collected data were analyzed using descriptive statistics and SPSS-20 software. Results were analyzed by means of mean±standard deviation and percentages. The relationship between variables was analyzed using logistic regression test and $p<0.05$ was considered significant

Results

From about 700,000 patients referring to Emergency Departments of Imam Khomeini, Bouali Sina hospitals in Sari and Razi hospital in Ghaemshahr from 2008 to 2015, 110 patients with non-traumatic SAH admitted to centers of Mazandaran University of medical sciences were evaluated and studied. The results of the study showed that the mean age of the patients was 53±16.92 years. The highest incidence of non-traumatic SAH in the age group was over 40 years old, especially 40 to 60 years old (31% men and 18% women). The lowest incidence was in the age group of 0 to 20 years. In the age group older than 40 years, most of the patients were men and in the age group under 40 there was no significant difference between the two sexes. The mean length of hospitalization was 14.7±4.77 days. In this study, high blood pressure had highest and alcohol consumption had the lowest prevalence in the studied population compared with other risk factors (Table 1).

Among 110 patients with non-thrombotic SAH, 102 patients (92.7% of the studied population) had a sudden onset of clinical symptoms. Among the clinical manifestations that were examined, the highest

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incidence was headache and the lowest incidence of clinical symptoms was related to swallowing disorder (Table 2). Most of the subjects were at Level 2 of Hunt and Hess criteria (36), and nobody was at level 0. Most people with GCS=15 were referred to the emergency department (61). The most common finding in CT was SAH, which included 97 patients (88.2% of the population studied).

Table 1. Outbreak of underlying diseases in patients with non-traumatic hemorrhage

Variable	N(%)
Man	56(59)
Woman	45(41)
Without riskfactor	47(42.7)
HTN(Hypertension)	52(47.3)
Diabetes (DM)	30(27.3)
Hyperlipidemia (HLP)	31(28.2)
Alcohol	3(2.7)
Smoking	26(23.7)
Ischemic heart disease (IHD)	11(10)

Table 2. Prevalence of clinical symptoms in patients with non-traumatic hemorrhage

Clinical symptoms	N (%)
Acute	102(92.7)
Gradual	8(7.3)
Headache	88(80)
Dysphagia	1(0.9)
Dysarthria	3(2.7)
Syncope	2(1.8)
Hemiplegia	9(8.2)
Fascial paresis	4(3.6)
Seizure	7(6.4)
Nausea and vomiting	40(36.4)
Vertigo	8(7.3)

Three patients had ICH along with SAH in CT scans. In 4 patients, along with the SAH view, IVH was seen in CT scan. There were no changes in the first CT scan in 11 patients, and the patient was diagnosed with LP. Among the 110 patients with non-traumatic SAH, 82 patients (74.54%) had non-surgical treatment and 28 patients (25.46%) had undergone surgical treatment. Most of the patients undergoing surgery were at Level 2 and 3 Hunt and Hess criteria (19 patients). None of the patients who were at Level 1 of Hunt and Hess criteria were treated without surgery and all of these 4patients received non-surgical treatment. 89 patients (80.9%) survived and 21 patients (19.1%) died. Most deaths were in the age group of 60 to 80 years old. In the age group of 0 to 20 years, none of the patients died.

Most patients (13 patients (11.81%) of the studied population) which died were at level 5 of Hunt and Hess criteria. Most of the patients were uncomplicated, but the most complication was hydrocephalus (Fig. 1). The majority of patients who were at Level 1 to 3 of Hunt and Hess survived with the highest number of 35 patients (31.81) at Level 2. In addition, none of the patients at Level 1 had died. The only risk factor which was significantly higher among those who died was high blood pressure. This relationship was independent of the role of other factors, and hyperlipidemia, diabetes, ischemic heart disease, smoking, and alcohol consumption had no statistically significant difference among the living and dead persons (Table 3).

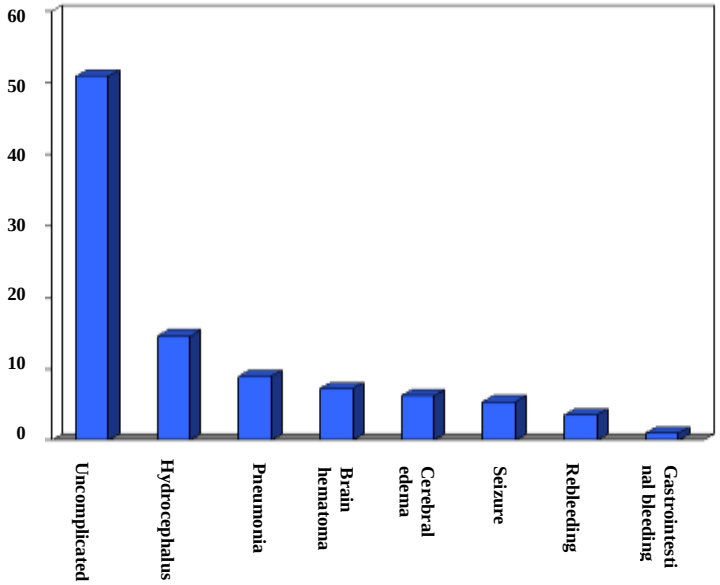

Figure 1. Distribution of relative frequency of complications in the studied patients

Table 3. Relationship between variables and mortality rates

Variable	Death N(%)	Odd ratio	CI-95%	P-value
Hypertension	15(71.4)	79.3	1.13-12.51	0.03
Hyperlipidemia	6(28.6)	0.33	0.07-1.38	0.12
Diabetes	7(33.3)	1.38	0.41-4.65	0.6
Alcohol	2(9.5)	6.71	0.43-104.26	0.17
Smoking	4(19)	0.48	0.11-1.98	0.31
Ischemic Heart Disease	4(19)	2.54	0.45-14.19	0.28

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Discussion

In this study, about 15.7 per 100,000 patients in the emergency department formed SAH patients with the highest number of patients in the age group of 40 to 60 years old, and most of them were male and the most risk factor in patients with non-traumatic SAH was history of high blood pressure. The incidence of acute subarachnoid hemorrhage is about 2 to 22 per 100,000 cases per year, of which about 60% are between 40 and 60 years old, but there is no accurate information on this in different parts of the world, including Iran (17, 16). But, in some studies, the incidence of non-traumatic SAH is higher in women (18).

Hydrocephaly levels were found to be between 5% to 25% (19%) and seizure ranges between 1% to 28% (20%) and recurrent hemorrhage between 10% and 22% (21%) in different studies and in this study, these complications were observed in the patients. In the present study, the most risk factor in patients with non-traumatic SAH was history of hypertension, of which one fifth of these patients died. In some studies, hypertension is associated with an increase in the severity of primary bleeding and is a major risk factor for reversible aneurysmal bleeding, a potential fatal outcome (22). In some studies, diabetes and smoking were shown to be the worst outcome in patients with non-traumatic SAH contrary to hypertension (23). In this study, there was a high prevalence of diabetes and long-range lipoprotein disturbances after high blood pressure, but they assigned the next ranked number of risk factors after hypertension. In addition, more than 20 percentage of people with diabetes and hyperlipidemia died and smoking was after them. Sudden and unexpected headache associated with nausea or vomiting as the main symptom of patients with non-thrombotic SAH had been confirmed in many studies (25, 24). In this study, people with hypertension who had SAH had more mortality than others, while in some studies diabetes and smoking were considered as an independent risk factor for poor outcome and blood pressure did not change the final outcome of the patients (23).

Other studies have shown that control of blood pressure in patients with SAH improves the prognosis of 6 months in patients. Regarding the potential risks of SAH, all patients with a headache, especially a sudden headache with a history of blood pressure, should be carefully and accurately screened for SAH. Due to the fact that the information from this research was collected from medical records of the hospital, in some cases, the incompleteness of the file information was restricted.

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