

Risk Factors and Clinical Manifestations
of Cerebral Venous Thrombosis (CVT)
in Patients Admitted to Ardabil City
Hospitals during 2012-2017Abolfazl Atalu¹, Ghasem Fattahzadeh-Ardalani^{1*}, Afshan Sharghi² and Hamed Ezzativand³¹Department of Neurology, Faculty of Medicine, Ardabil University of Medical Science, Ardabil, Iran²Department of Community Medicine, Faculty of Medicine, Ardabil University of Medical Science, Ardabil, Iran³General Practitioner, Faculty of Medicine, Ardabil University of Medical Science, Ardabil, Iran

Article Information

Received date: Nov 27, 2018

Accepted date: May 27, 2019

Published date: May 29, 2019

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CC-BY 4.0Keywords Cerebral venous sinus
thrombosis; Sign upper sagittal sinus;
Etiology

Abstract

Background and objective: In Cerebral venous thrombosis (CVT), blood clots create in the veins and sinuses. Detection of disease due to the wide spectrum of clinical symptoms may be delayed, the importance of timely diagnosis of this disease is that with early treatment, death can be avoided and serious and lifelong complications can be prevented in many patients. Also, recognizing the underlying causes and other factors that contribute to the onset of the disease can prevent the disease.**Methods:** This cross-sectional descriptive study has been done on 28 patients diagnosed with cerebral venous sinus thrombosis during years 2012 to 2017 that hospitalized in Ardabil city hospital. Demographic data of patients and information about laboratory tests and clinical and Para-clinical findings were entered in a checklist and then analyzed by statistical methods in SPSS version 19.**Results:** The mean age of the patients was 36.6 ± 8.7 years and most of them were in age group less than 30. Of all patients, 53.6% were female. The most prevalent symptoms and signs among patients was headache. Upper sagittal sinus with 50% was the most prevalent involved vein. 53.4% of women were taking oral contraceptive pills (OCP) and 46.2% of male patients had smoking and drug addiction. Thrombotic occlusion often affected the sagittal and then transverse sinuses. 10 cases (35.7%) had findings based on ischemia and 4 (14.3%) had intracranial hemorrhage.**Conclusion:** The results showed that the high incidence of CVT in females was more than males which can be the sign for relation between CVT with factors such as OCP use and pregnancy. Also regarding to the vomiting and dizziness as the most common clinical symptoms in patients so it can be a means of distinguishing headaches caused by the disease with other common headaches and help in diagnosis.

Introduction

Cerebral venous thrombosis (CVT) is one of the rare stroke types which results in the formation of blood clots in the venous sinuses that responsible for brain drainage. Surface and deep vein drain into the dural sinuses and these sinuses are also evacuated to jugular veins. In the CVT of the brain, blood clots can be produced in the veins or the sinuses. Venous thrombosis can cause venous infarction as are sult of brain tissue damage due to compression scant blood flow [1]. Although intravenous CVT known as a rare disease and includes less than 1% of brain stroke, in recent years its recognition has increased with the use of MRI and exact identification of its clinical symptoms [1-3]. CVT was first reported in 1825 and its exact incidence rate is unknown but can affect all age groups from 6 days to 77 years. The average age is 33 years and the prevalence is higher in women (Khosravi).

The risks of CVT include systemic conditions such as pregnancy, hyperviscosity syndromes, Behcet, coagulopathy such as protein C resistance, factor V mutation in Leiden, collagen vascular disease and antiphospholipid antibodies. Involvement in young women is important because it can be occur due to the use of contraceptive pills [4].

Oral contraceptive Pill (OCP) is a major risk factor for CVT and routinely should be considered. In many studies, OCP is the most common underlying cause in women. Due to the wide range of clinical Symptoms diagnosis of disease may be delayed and mistaken with other pathological conditions. This range of resistant headaches may be different from severe syndromes of intracranial pressure, nerve defects focal and Kuma and so they should be distinguished in differential diagnosis of all secondary headaches. In studies, mutual headache was the most common symptom with no specific pattern. Before confirming the diagnosis, one third of patients experience focal or generalized

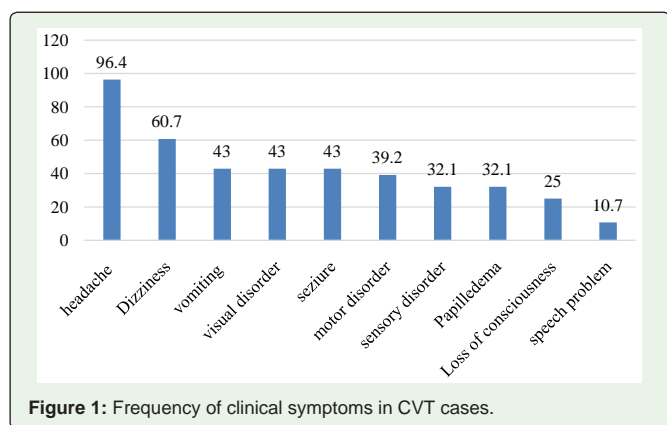
seizures that in some cases it can lead to death [1,4]. Considering the importance and necessity of timely diagnosis of this disease as well as low number of studies in this field in the province and the country level, the aim of this study was to investigate the frequency demographic, characteristics and clinical findings of CVT in patients referred to Ardabil city hospital.

Material and Methods

This is a descriptive cross-sectional study that was done on 28 hospitalized patients with CVT who were hospitalized in Ardabil city hospital from Sep 2012 to Sep 2017. The primary diagnosis of the disease was based on a clinical presentation and performed by MRI or CT scan and final confirmation by magnetic resonance venography (MRV) and radiology report. History and primary symptoms of patients were registered through examinations by physicians in the emergency department. Brain MRI and MRV imaging was performed for all patients and radiology report was done for all MRV. The final site of the CVT written in the file of patients based on the diagnosis of a doctor and radiology report. The method of sampling was census and all of patients entered in the study. Demographic data including age, sex, season of the incidence of CVT, effective risk factors and laboratory tests such as CBC - PT - PTT - INR, Serum Level of Protein S and serum level of protein C were collected for all patients during hospitalization.

Statistical analysis

Statistical analysis was done using the SPSS 19.0 program



(Statistical Package for Social Sciences; SPSS Inc., Chicago, IL, USA) for Windows 8 by using descriptive and analytical statistical methods. The significant level was considered to be less than 5%.

Results

The average age of the patients was 36.6 ± 8.7 years (range: 16-60) and most of the patients were in the age group less than 30 years. The average age of women was 35.2 ± 7.6 and the men were 39 ± 9.2 years. Of all patients, 15 (53.6%) were female and the rest of them were male. The most common clinical symptoms were headache (96.4%) (Figure 1). The upper sagittal sinus with 50% was the most common venous involvement in patients (Figure 2). 53.4% of women with CVT had OCP use and 46.2% of male patients with CVT had smoking or opium use. In summary OCP use with 46.2% and smoking and opium use and idiopathic each with 21.4% were the major risk factor for CVT (Table 1). Of all patients, 10 (35.7%) had parenchymal infarction or lesion and 4 (14.3%) had intracranial hemorrhage in the brain imaging [5-11].

Discussion

In this study of all patients, 15 (54%) were female and 13 (46%) were male. In other studies in Saudi Arabia, Kuwait, Mashhad, Tehran and Isfahan the number of women was more. In previous studies, the prevalence of the disease in women compare to the total population is usually above 70% that in the present study the prevalence rate in female was 54% and in men was 46% that can be due to causes such

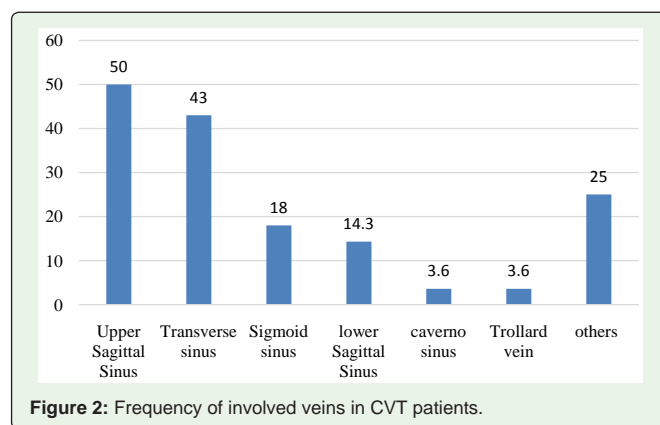


Table 1: The frequency of risk factors for CVT in patients by sex.

Sex Risk factors	Male		Female		Total	
	n	%	n	%	n	%
OCP use	0	0	8	53.3	8	28.6
Pregnancy & Postpartum period	0	0	2	13.3	2	7.1
Lower protein S	1	7.7	1	6.7	2	7.1
Smoking and opium abuse	6	46.2	0	0	6	21.4
Using steroid drugs	1	7.7	2	13.3	3	10.7
Lupus	0	0	1	6.7	1	3.6
Rheumatoid Arthritis	0	0	1	6.7	1	3.6
Polycythemia	1	7.7	0	0	1	3.6
Thrombosis	1	7.7	0	0	1	3.6
Malignancy	2	15.4	0	0	2	7.1
Infection	2	15.4	0	0	2	7.1
Heart disease	0	0	1	6.7	1	3.6
Idiopathic	2	15.4	4	26.7	6	21.4

as trauma, smoking and opium abuse which was more prevalent in men [10,12-15]. The average age of patients was 36.6 years old in the range of 16-61 which compared to other studies; the age range of patients was similar. This finding confirm that the people in the age range of 30 to 40years was at risk which was the effective people in the country [12-15,10]. Of the complaints and clinical symptoms, the most common clinical finding in patients was headache with 96.4%. In a study by Nikkaha et al., in Mashhad, 100% of patients, Lotfi et al, study in Tehran 80%, a study by Sadat Nia et al., in Isfahan 94% of patients, Kajtazi et al., study in Saudi 77% and Vembu et al., in Kuwait 93% of patients, have complained of a headache [10,12-15].

There was papilledema in 32% of patients in the current study and an obvious difference was seen in its prevalence with other studies in the country which had occurrence between 50-70% [13,14].

Among other clinical symptoms, the prevalence of seizures was almost in line with other studies and there was no significant difference [10,12-15]. In the case of etiology and etiologic factors of the disease, the most prevalent cause of disease in women was oral contraceptive pills with 53.4% and in men was smoking and drug abuse with 46.2%. The most common etiologic predisposing factor to the disease in the current study was oral contraceptive use in women with 53.4% which was in line with other studies which conducted in the country and in Saudi Arabia and Kuwait [10,12-15]. In the study of Lotfi et al., in Tehran, in 26% of cases, the underlying cause of infectious was reported. This finding could indicate a reduction in infectious causes and a reduction in the incidence of infectious diseases due to the widespread use of antibiotics and an increase in personal hygiene or justifying with the living conditions of people in each are [14]. In the present study, the upper sagittal sinus with 50% was in the high priority in terms of sinus thrombosis location. In some patients, there has been a combination of multiple sinus and venous involvement. In this study similar to other studies, the most common

location of involvement were upper sagittal sinus and then transverse sinus [10,12-15]. CVT was seen in only 3% of cases and in compare to other studies was low that can be due to presence of genetic disorders predisposing conditions in patients. So, we can said that perhaps the differences in the genetics of different races has been the cause of this result [12-15,10]. The prevalence of headache were 70%, 86.4%, 100% and 84.6% in the studies by Foroghi poor et al, 22 Khomand et al., Nikkaha et al., and Amirifard et al, respectively which was lower than other study results in most of them [16-19].

In the present study, OCP, smoking and opium use and Idiopathic were the major risk factors for CVT which wasn't similar to Amirifard and et al, study that reported infection, pregnancy, postpartum period and dehydration as the major risk factors for CVT [19].

Conclusion

In the present study the results of previous studies regarding the more incidence of CVT in female were confirmed. Also, most of patients were in the age group less than 40 years. Headache and dizziness were the main clinical symptoms in patients. The thrombotic obstruction involved most of the sagittal and transverse sinuses. OCP use in women and smoking in men were identified as the main risk factor for CVT incidence. Considering the low number of patients in this study and the difference in risk factors and clinical symptoms. We suggest that a study be conducted with longer duration in this topic on more samples in future. Also, doing case-control studies on relation between OCP and CVT by determining its type, duration and rate of using drugs can provide useful information on CVT common cause in future.

Acknowledgment

The results of this study were approved by ethical committee of Ardabil University of Medical Science and author would like to thanks all patients who participated in the study.

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