

One Decade “Narcotic Addicted Patients with Deep Vein Thrombosis” in St. Alzahra Hospital of Isfahan, Iran

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Original Article

Abstract

Background: Behavior and substance addiction is one of the risk factors for deep vein thrombosis (DVT). The aim of this study investigating the relationship between the different clinical manifestations pattern of DVT with the way, the amount and duration of narcotic drugs in patients admitted to St. Alzahra Hospital in Isfahan, Iran, during 10 years.

Methods: In a cross-sectional study we studied all of the patients with DVT in St. Alzahra Hospital since 2003-2013 were studied.

Findings: A total of 238 (59.1%) of the patients were male and 165 (40.9%) female. The mean age of men and women were 18.80 ± 48 and 19.60 ± 3.48 years old. The mean length of staying in the hospital was 5.40 ± 7.20 days. Addiction among patients with DVT was 19.1%. 28.2% of men suffered from DVT and 6% of the women were drug addicts ($P < 0.001$). Among the 77 patients taking the drug, 53.2% were heroin, 35.1% opium, and 11.7% used other injectable drugs. The results showed that 19 patients (28.6%) were taking the drug once daily, 27.3% twice a day, 6.5% three times a day, 15.6% once a week, and 26% taking the drug twice a week. From 403 patients, 2.2% had a problem in the upper limb, 44.4% in the left hand, and 55.6 in the right hand. The results showed that none of the 77 studied patients had involvement of upper limbs, but all of them in the lower limb. About 11.2% of studied patients were addicted to injective drugs. Also, 6% were addicted to non-injectable drugs and 2% to both injectable and non-injectable drugs.

Conclusion: DVT has many risk factors and addiction and intravenously (IV) drug abuse one of the most important for this illness and this problem must be noticed by health worker and physicians.

Keywords: Deep vein thrombosis, Prevalence, IV drug abuser, Addiction

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Introduction

Deep vein thrombosis (DVT), is the creation of a blood clot (thrombus) in a deep vein, which may partially or completely block blood flow or be released and go to the lungs.¹ DVT is a clinical challenge for physicians, which can complicate the pattern of a disease, but may also occur in the absence of other disorders. Thrombosis can occur in any part of the venous system, but often occurs in the deep veins of the lower limbs. The major concern is pulmonary embolism blood clots, which can be fatal.² DVT is a relatively common disease with the annual incidence rate of 60-80 cases per 100000 people for the first time in the U.S, and 3000000 new cases are identified every year.^{3,4} In the UK, around one in three new cases of DVT can be detected for every 1000 people.¹

Many cases of DVT are clinically silent and will recover on their own without complications. On the other hand, its clinical diagnosis is not accurate, so it is more difficult to determine its exact incidence time which is usually estimated less than the actual rate, but this rate is about 80 cases per 100000 people each year in the general population. DVT primarily affects patients over 40 years and is more common in men.⁵ Clinical manifestations of DVT depend on the degree of obstruction of venous flow, obstruction spot, and inflammation of the vessel wall. Patients may be asymptomatic but if it occurs, symptoms may include unilateral swelling of the affected limb with sensitivity, warmth, redness and swelling of superficial vessels. There is no relation between the sign and the size, location and extent of DVT.⁶ DVT is more prevalent in users of drugs, especially injectable narcotics. At 3%, the annual incidence of DVT in drug addicts is about 100 times higher than the general population.⁷⁻⁹

In people who abuse drugs intravenously (IV), the degree of venous insufficiency or damaged blood vessels through injections, or through the formation of DVT develops. Long-term venous insufficiency can result in painful sores of the lower limb that can cause a negative impact on the quality-of-life.¹⁰ Besides, the risk of DVT incidence due to IV drug use is more prevalent in younger patients who are more likely to stay longer in hospital.¹¹ There is debate on the cause of DVT in the general population, in which probabilities such as coagulation, stasis, vascular

damage, and anoxia damage to venous valves are considered.^{12,13} However, the etiology factors are different among IV drug users. Possible causes include decreased blood flow from the inactive muscle pumps during intoxication, endothelial damage resulting from injection and high clotting factors due to infection infusion.¹⁴ Drug users with a history of DVT are reported to have poorer physical and mental health condition than users without a DVT history. This is consistent with long-term complications of DVT in the general population.²

A common method of injecting drug users (IDU), which is common in some countries, is injecting into the femoral vein.¹⁵ Doctors assert that the such injection might increase the risk of DVT. However, the proportion of IDU in the development of DVT has received little attention. Drug abuse has increased in recent years, and IV addiction is the most common form of drug abuse in Iran. Previous studies have established a link between drug injection and DVT.¹⁶ According to available statistics, using drugs, either as injection or non-injection is increasing as one of the major risk factors for DVT in different social and age groups in developing countries such as Iran. In this regard, the pattern, amount, and duration of using are influential. As a result, this study made an attempt to carry out a retrospective study of the relationship between DVT and the pattern, amount and duration of using narcotic drugs in patients admitted to St. Alzahra Hospital in Isfahan, Iran, with this diagnosis from 2003-2013, and compare the effect the constant use of non-injectable and IV drugs injective with the use of non-injective narcotic drugs on DVT and finally investigate the impact of these issues on the pattern of different clinical and paraclinical manifestations of DVT.

Methods

This was a cross-sectional study carried out in St. Alzahra Medical Center in Isfahan in 2013. The population included all DVT patients who had been hospitalized. In this study, patients with DVT hospitalized in St. Alzahra Hospital in Isfahan during 2003-2013 were recalled, and questionnaires of using drugs were completed face-to-face so that drug-related information on the pattern, amount, and duration of non-injective and injective drugs use were collected and studied.

Inclusion criteria included:

1. A history of hospitalization in St. Alzahra Hospital in Isfahan during the years of 2003-2013 with the diagnosis of DVT and finding the file in the archives of Isfahan St. Alzahra Hospital

2. The presence of the patient to complete the drug using questionnaire.

Exclusion criteria included:

1. Hospitalization in Isfahan St. Alzahra Hospital with the diagnosis of DVT in a time outside the outlined timeframe

2. Insufficient information needed for patient records

3. Absence of the patient to complete the drug using questionnaire.

Systematic sampling was used in this study. The sample size was calculated using a sample size for prevalence studies mentioned below by considering a confidence level of 95%, 50% prevalence of drug use in patients with DVT and the significance level of 0.05 for 384 people.

The data required for this study was provided by a questionnaire developed for this purpose, and they were completed by referring of the researcher to the patient's file and contacting with the patient or his family. After the data had been collected, they were analyzed through SPSS software (version 18, SPSS Inc., Chicago, IL, USA) using chi-square, and t-test.

Results

In this study, 403 patients with DVT were studied

from the beginning of 2003 to the end of 2013 hospitalized in St. Alzahra Hospital. 238 (59.1%) of the patients were male, and 165 patients (40.9%) were female. The mean age of men and women were 18.8 ± 48 and 19.6 ± 48.8 years, respectively, and there was no significant difference between sexes ($P = 0.900$).

25 (6.2%) of the patients under study were workers and farmers, 7 (1.7%) employees, 139 (34.5%) were self-employed, 15 (3.7%) were school students and college students, 156 (38.7%) were housewives, and 61 (15.1%) were retired and unemployed. The mean length of hospital stay was 5.4 ± 7.2 days. The minimum time of hospitalization was 1 days, and the maximum was 70 days. The mean duration of hospitalization for men was 6.4 ± 7.5 and for women 3.3 ± 6.7 days, and there was no significant difference between sexes ($P = 0.120$). The results related to the prevalence of risk factors for DVT in patients under study are shown in figure 1. According to figure 1, the upper age the highest frequency in these patients (59.1%).

According to the results, 41 patients (10.2%) did not have any risk factor. 185 patients (45.9%) had one risk factor, 131 patients (32.5%), had two risk factors, 37 (9.2%) had three risk factors, and 9 patients (2.2%) had four risk factors. The most common risk factor was for people who had one risk factor and the least common risk factor was for people who had four risk factors.

Based on the results obtained from 403

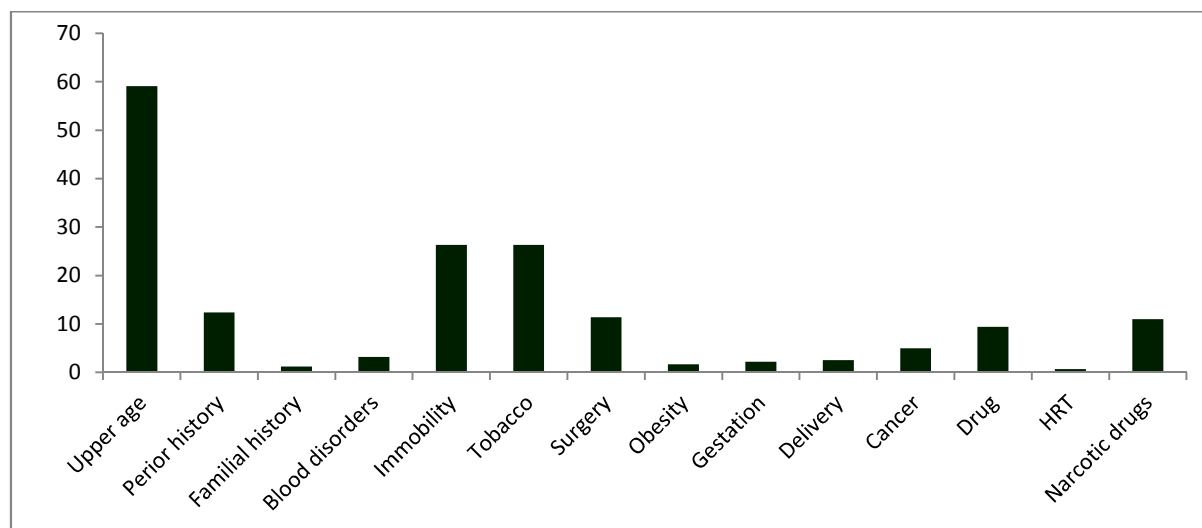


Figure 1. Frequency of deep vein thrombosis risk factors in the studied patients

HRT: Hormone replacement therapy

patients, 9 patients (2.2%) had problem in the upper limb, among which 4 patients (44.4%) had problem in the left hand, and 5 patients (55.6%) had problem in the right hand. Also, 394 patients (97.8%) had problem in the lower limb, among whom 242 patients (61.4%) had problem in the left leg, 139 (35.3%) had problem in the right leg, and 13 (3.3%) had problem in both feet. On the other hand, 3 men and 6 women had problem in the upper limb (1.2% vs. 3.6%) and reciprocally, 235 men and 159 women had lower extremity involve had problem in the lower limb (98.7 vs. 96.4%). However, Fisher's exact test showed that the upper limb involvement does not have a significant difference ($P = 0.190$) in terms of gender, but involvement of the lower limb is different in the two sexes ($P = 0.020$).

392 patients (97.3%) patients had swelling in the area, 344 (85.4%) had pain, 131 patients (32.5%) had sensitivity, 195 patients (48.4%) felt warmth in the area, 96 patients (23.8%) had redness, 6 patients (1.5%) had swollen region, and 28 patients (7%) had fever as well.

45 (11.2%) of studied patients were addicted to injective drugs. Furthermore, 24 patients (6.0%) were addicted to non-injectable drugs and 8 patients (2.0%) were addicted to both injectable and non-injectable drugs. According to the figure, the prevalence of addiction among patients with DVT was 19.1%. According to this result, 28.2% of men suffered from DVT and 6% of the women were drug addicts and the chi-square test showed that the prevalence of addiction was significantly higher ($P < 0.001$) among male patients. Among the 77 patients taking the drug, 41 patients (3.2%) were heroin addicts, 27 patients (35.1%) were opium addicts and its derivatives (sap and burned), and 9 patients (11.7%) used other injectable drugs such as norgesic and temgesic.

The results showed that 19 patients (28.6%)

were taking the drug once a day, 21 patients (27.3%) twice a day, 5 patients (6.5%) three times a day, 12 patients (15.6%) once a week, and 20 patients (26.0%) were taking the drug twice a week. The results showed that none of the 77 studied patients had involvement of upper limbs, but all of them had a problem in the lower limb. Furthermore, among the 41 patients taking the drug, only 28 patients had a problem in the left foot, had a problem in the right foot. Among the 27 taking opiates, only 14 patients had involvement in the left foot, and 13 patients had a problem in the right foot. Among the 9 patients using norgesic and temgesic, 4 had involvement in the left foot, and 5 patients had a problem in the right foot or both feet. Chi-square test showed that DVT clinical manifestations have a significant difference depending on the drug used ($P = 0.002$). 13 (54.2%) of those using drugs constantly had a problem in the left foot (54.2 vs. 62.3%). Meanwhile, chi-square test showed that there is no relationship between the constant use of the drug and the part of body suffering from DVT ($P = 0.430$).

Investigating the incidence pattern of DVT from 2003-2013

According to the investigations carried out, whose results are shown in table 1, the average annual incidence of DVT in St. Alzahra Hospital was about four thousand cases hospitalized from 2003-2006. For example, in 2006, from a total of 27443 patients admitted to the St. Alzahra Hospital, DVT 110 cases were found. Taking this into account, the prevalence of the disease among the hospitalized patients was 4000 in that year. The results of subsequent years are shown in table 1. However, the statistical analysis on the data showed that the incidence pattern of DVT has increased in the past decade. However, this trend was not statistically significant ($P = 0.360$). Figure 2 shows the variation pattern of DVT.

Table 1. Distribution of DVT cases in St. Alzahra Hospital from 2003-2013

Year	Number of hospitalized patients	DVT cases	Prevalence (per 1000)
2003-2006	27443	110	4 (The annual average)
2007	34311	160	4.7
2008	36603	133	3.6
2009	40824	173	4.2
2010	41334	187	4.5
2011	41756	195	4.7
2012	45010	200	4.4
2013	44765	280	6.3

DVT: Deep vein thrombosis

Increased prevalence of addiction during the past decade has certainly had a positive impact on the high incidence of DVT. Review of patients' records from 2003-2013 showed that the prevalence of addiction has had an increasing trend until 2004 and then has declined for 2 years and later took a rising trend again in 2013. Chi-square test showed that the prevalence pattern of drug use among patients with DVT has had a significant difference during this period ($P = 0.010$). Results are shown in figure 3.

Investigating the prevalence rate of DVT risk factors from 2003-2013

Changes in the prevalence pattern of DVT risk factors over a period of 10 years are shown in figures 4 and 5. According to the two figures,

most of the mentioned risk factors have had a changing trend during this period but the drug use and smoking risk factors have had an increasing trend in the whole period.

Discussion

The overall purpose of this study was to determine the relationship between the pattern of different clinical and paraclinical manifestations of DVT with DVT and the pattern, amount and duration of using narcotic drugs in patients hospitalized in St. Alzahra Hospital in Isfahan with this diagnosis from 2003-2013. The mean age of patients was approximately 48 years old which is consistent with the age range of people over age 40 who are considered susceptible to DVT.

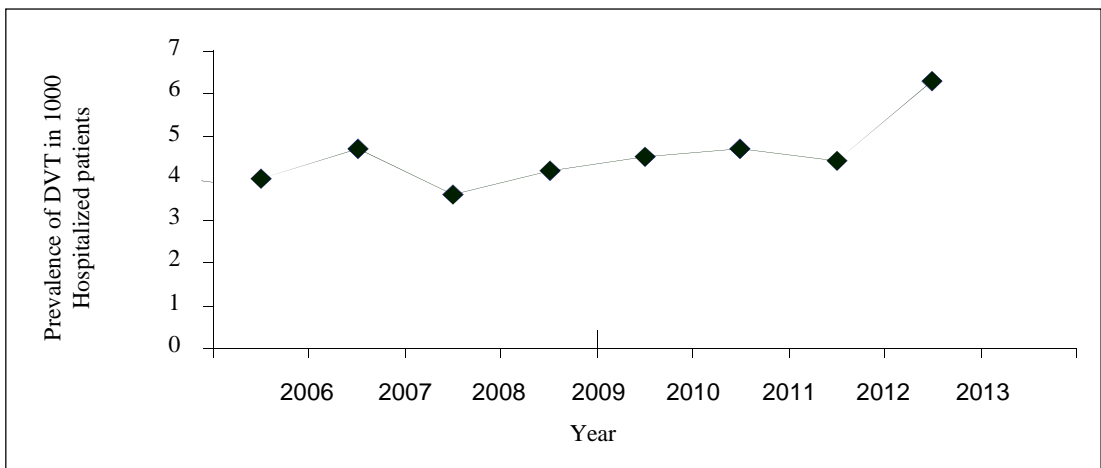


Figure 2. The prevalence of deep vein thrombosis among patients hospitalized in St. Alzahra Hospital from 2003-2013
DVT: Deep vein thrombosis

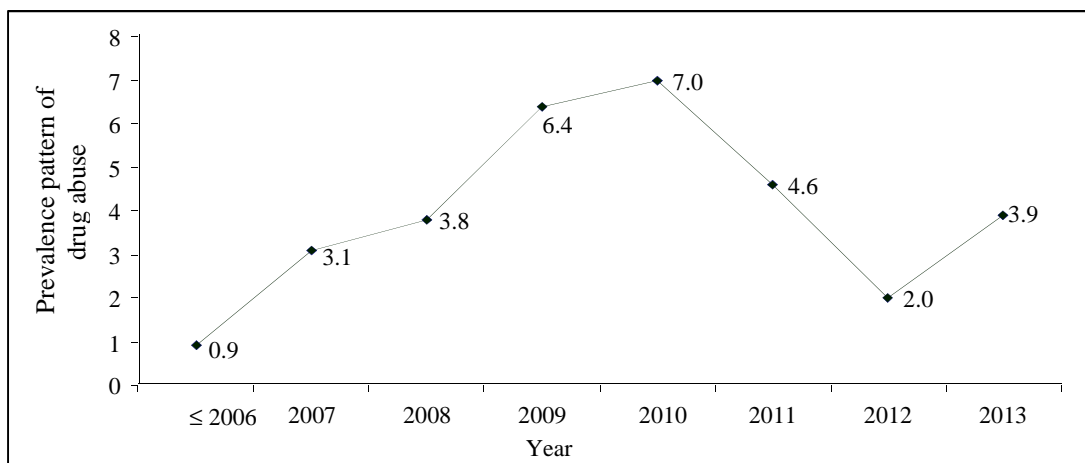


Figure 3. The prevalence pattern of drug abuse among patients with deep vein thrombosis from 2006-2013

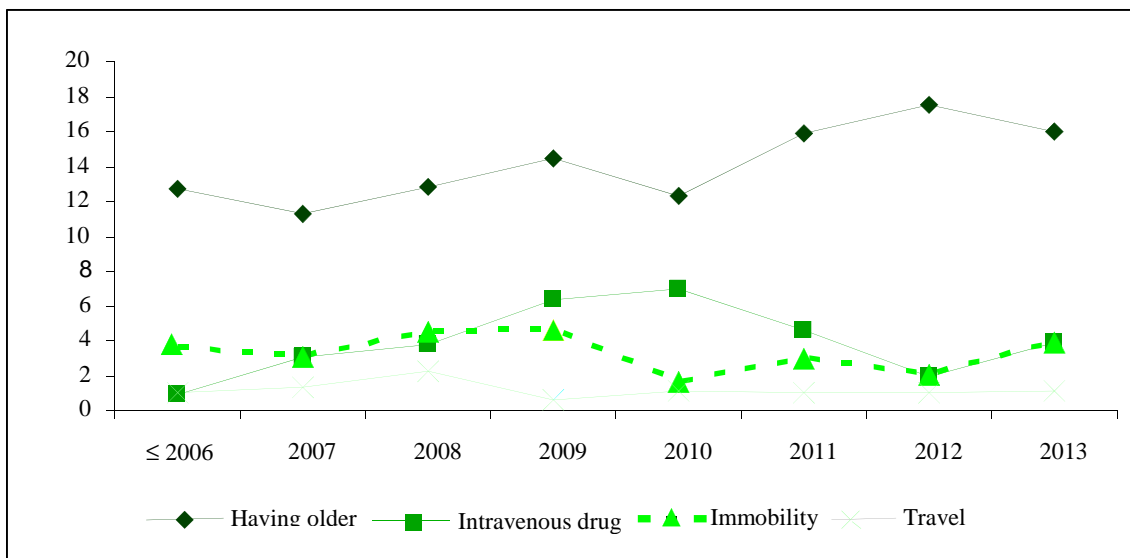


Figure 4. Prevalence of deep vein thrombosis risk factors from 2006-2013

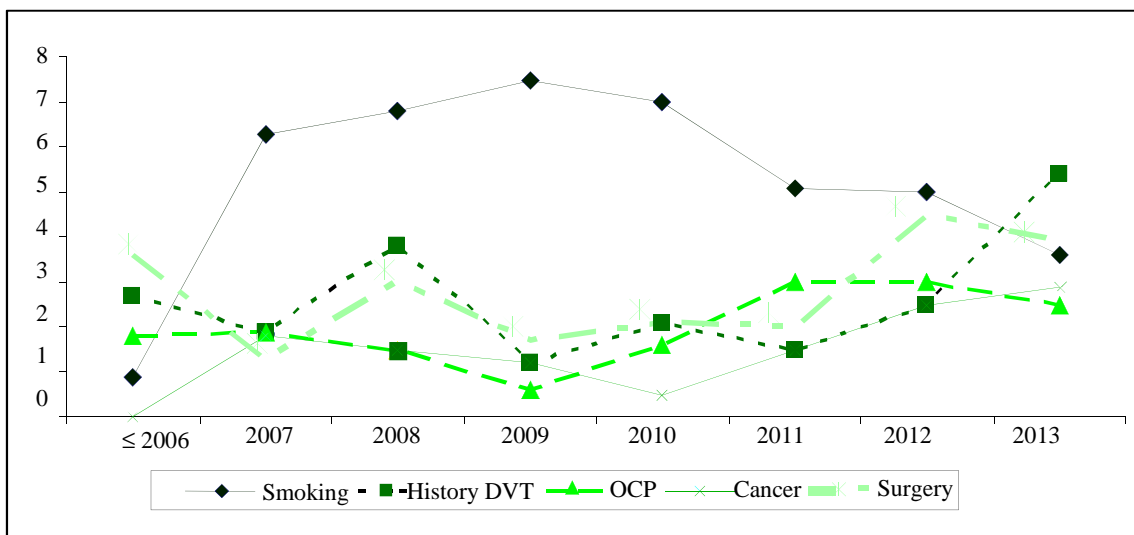


Figure 5. Investigating the prevalence of deep vein thrombosis risk factors from 2006-2013
 DVT: Deep vein thrombosis; OCP: Oral contraceptive pill

In a similar study conducted by Hemmati et al., the mean age of patients was 47 years¹⁷ and also a study in the UK, the average age of patients with DVT was 62 years old.¹⁸ In the present study, around 60.0% of patients were male. According to previous studies, complications of DVT are more common in men,¹⁹⁻²³ which is in line with the results of this study. In study by Masoomi et al. conducted in Kerman, Iran, from a total 150 patient with DVT, 95 were males and 55 were females.¹⁶

One key difference between the two sexes is possibly due to differences in exposure to risk

factors causing the disease between the two sexes. For instance, inactivity in long trips is one of the most important DVT factors which is more occurring among men rather than women. In a study conducted Soleimanpour in Kermanshah, Iran, approximately 56.0% of patients with DVT were male.²⁴ 11.2% of patients were addicted to IV drugs and 6.0%, were addicted to non-injective drugs, and 2.0% were both addicted to injective and non-injective drugs. Methods of using drugs play an important role in the incidence of DVT. People with a history of IV drug abuse may have a degree of venous insufficiency either through

venous injury due to injection or the DVT formation.¹⁰ For example, the role of IV cocaine, crack and heroin have been identified well for venous injuries.²⁵

The relationship DVT with IV drug abuse has been examined in previous studies.^{26,27} Ghosheh and Kahuria have reported one case of drug abuse with high venous thrombosis after direct injection of heroin.²⁸ Drug addictions can raise the risk of DVT for several reasons which have been mentioned in several studies. First, injective drug addiction is one of the most important factors for the incidence of thrombosis in the veins and directly results in getting the disease by patients. On the other hand, drug addiction is an important factor for individual's inactivity and addicts lose mobility due to physical dementia, and long inactivity provides the ground for the incidence of DVT in them. Long-term rests after drug use and also being drug sleepy and sluggish when they need drugs will cause the patient to lose its true mobility and provide the ground for the incidence of DVT. Masoomi et al. reported the risk of DVT in patients with IV drug using to be 4.25 times more than others.¹⁶

Another point that should be mentioned in this context is the use of materials and compounds that addicts use as a medicine or drug, but these factors are themselves considered as risk factors for DVT. Use of psychotropic drugs is one example that directly or indirectly paves the way for the disease. In study by Masoomi et al., the type of drug used by individuals was opium and heroin. In this study, considerable differences were found in the type of drug used and the incidence of DVT.¹⁶ Cornford et al. estimated the annual incidence of DVT to be 3.2% between 2005 and 2009 which was more frequent among users of drugs like heroin and cocaine (4.8%).⁹ In a study in Glasgow, IDU was 21.4% prevalent among DVT patients. Mechanism of DVT incidence in these patients is probably related to repeated puncture in the femoral vein by injecting the drug leading to endothelial damage and releasing of tissue factors. Findings based on the levels of coagulation factors and inhibitors were not found in these groups. Increased levels of coagulation factors may play a role in the etiology of DVT.²⁹

Smoking which has a high prevalence among addicts is also a causing factor of DVT. Many

studies have reported smoking as a risk factor for DVT,³⁰ while in others, such a result is not stated.³¹ Thus, injectable drugs, especially narcotics, have an essential and important role in the incidence of DVT and should strongly be considered while at the present time, with the increasing prevalence of drug abuse in the society, the incidence of this complication is also likely to rise. This issue should be trained in the field of addiction prevention, and necessary training about the signs and symptoms of DVT and its prevention methods should be presented.

Considering the prevalence of risk factors for DVT in the study population, high age was the most common risk factor in these patients. But how independent the age factor affects the disease requires a separate analytical study. Following the age factor, inactivity, and smoking were the most common risk factors so that 25% of patients had these two risk factors. Inactivity has been analyzed numerous studies and is a known risk factor for DVT and the pathophysiology of these factor is completely well known. In this study, the travel factor was seen as one of the risk factors for DVT. It was shown in a study that trips longer than 10 h or more increase the risk of DVT for 0.6.³²

DVT is a complication which should be highly noticed for hospitalized patients, patients undergoing surgery, and patients who are inactive for a long time. In a study in Charleston, the highest incidence of DVT was associated with surgery risk factors³³ and for such patients, anticoagulant medicines are used and with such contingencies, nowadays we are witnessing lower complication rates in hospitalized patients. Among the other prevalent factors, we can mention previous history of DVT and surgery and about 12% of patients had these risk factors. The impact of the previous history of DVT and surgical history are risk factors which have been mentioned in several studies and today, almost all hospitals highly pay attention to DVT, as one of the postoperative complications.⁸ Especially in orthopedic surgery patient in which a part of body may remain motionless for long, anticoagulant therapy is prescribed.

Another risk factor which has covered nearly 10% of patients in this study is a contraceptive drug which is highly prevalent in Iran. Nowadays, the use of contraceptive pills and hormone replacement therapy (HRT) treatments

are very common in Iran, and one of the few complications of these drugs is the risk of thrombosis which included approximately 10% of patients in this study. Some studies suggest a link between long-term use of these drugs and the risk of DVT. In a study, the risk of DVT by the use of contraceptive drugs is estimated to be 2.5 from 1 to 5 years use, and 2.1 more than 5 years use.³⁴

Another major risk factors for DVT is cancer. In a study, the incidence rate of DVT in cancer patients was estimated to be 4-20%.^{35,36} As indicated previously, determining the independent role of each of these risk factors in thrombosis is very difficult and beyond the scope of this discussion because based on this results, about half of the patients had more than one risk factor for developing DVT, and thus determining the independent role of each of these factors is really difficult and requires several comparative studies. Based on the results, it can be inferred that many risk factors are involved in the incidence of DVT in our society and usually more than one risk factor contributes to create this complication.

Another finding of the study which was one of the main aims of this study was the prevalence of drug addiction so that in more than 90% of patients, lower limbs were involved (including the right leg and left leg). The part of body having the most involvement was the left foot so that approximately 58% of patients had thrombosis in the left leg.

Of course, associating one risk factor for thrombosis in such cases is very difficult and cannot be justified. However, in cases such as surgery and inactivity, the suffering location is surely in the injury spot. Another issue that was examined in this study was the incidence of DVT from 2005 to 2013. Though there was no significant difference between the incidence rate of the disease during the mentioned 8 years, but its incidence has increased about 2%. The prevalence of this complication among those hospitalized in St. Alzahra Hospital was 4 per

each 1000 hospitalizations, but in 2013 it reached to 6.3 per each 1000 hospitalizations.

This disorder rarely occurs in children < 15 years old.^{37,38} Its prevalence increases with age and at the age of 56-69 years is 1.8% per 1000 person and at the age of 85-89 years is 3.1% per thousand people.³⁹ The rising trend of DVT can occur for many reasons. The first reason is in the prevalence of its risk factors that have increased in recent years such as long-term trips and air travels, increasing use of oral contraceptive pill (OCP), increasing the number of surgeries, etc.⁴⁰

Another noteworthy issue is the recognition of DVT cases which has become more and more accurate in recent years. In other words, by increasing the physicians' ability to detect the disease and the arrival of new diagnostic devices many cases of this disease which would remain unknown in the past, are recognized today. Also, the emergence of a range of other risk factors, such as the treatment of HRT, the widespread use of contraception, etc. are also influential in increasing the incidence of DVT.

Conclusion

Drug use is a contributing factor in the incidence of DVT and should be considered:

1. Drug addiction can boost the likelihood of getting the disease in several ways to and steps should be taken for its prevention among addicts, patients, and sedentary people
2. Older age, long journeys, smoking, and surgeries are among the common risk factor for the incidence of DVT in these patients
3. Over the past 8 years, DVT has had an increasing trend.

Conflict of Interests

The Authors have no conflict of interest.

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بررسی روند و الگوی تظاهرات بالینی ترومبوز وریدهای عمقی با نحوه، میزان و مدت مصرف داروهای مخدر در بیماران بستری شده با این تشخیص در بیمارستان الزهراء (س) اصفهان طی ده سال

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مقاله پژوهشی

چکیده

مقدمه: ترومبوز ورید عمقی (Deep vein thrombosis یا DVT) عبارت است از ایجاد یک لخته خون (ترومبوز) در یک ورید عمقی که به طور معمول در اندام‌های تحتانی رخ می‌دهد. در واقع در بسیاری از معتادان به مواد مخدر، تزریق ماده در ورید منجر به این عارضه می‌شود. این مطالعه جهت تعیین شیوع و روند DVT در بیمارستان الزهراء (س) اصفهان انجام گرفت.

روش‌ها: در مطالعه مقطعی حاضر تمام بیماران مبتلا به DVT در بیمارستان الزهراء (س) از سال ۹۲-۱۳۸۲ مورد مطالعه قرار گرفتند.

یافته‌ها: ۲۳۸ نفر (۵۹/۱ درصد) از بیماران مرد و ۱۶۵ نفر (۴۰/۹ درصد) زن بودند. میانگین سن مردان و زنان به ترتیب $48 \pm 18/8$ و $48/3 \pm 19/6$ سال و میانگین مدت بستری در بیمارستان $7/2 \pm 5/4$ روز بود. از عوامل خطر DVT در بیماران مورد مطالعه، سن بالا (با $59/1$ درصد) دارای بیشترین فراوانی بود. $11/2$ درصد از بیماران معتاد به مواد مخدر تزریقی، 6 درصد مبتلا به مواد مخدر غیر تزریقی و 2 درصد نیز معتاد به هر دو نوع بودند. شیوع اعتیاد در بین مبتلایان $19/1$ درصد بود که $28/2$ درصد را مردان و $6/1$ درصد را زنان تشکیل می‌دادند. از بین 77 بیمار مصرف کننده، 41 نفر ($53/2$ درصد) به هروئین، 27 نفر ($35/1$ درصد) به تریاک و مشتقات آن و 9 نفر ($11/7$ درصد) به سایر داروهای مخدر تزریقی اعتیاد داشتند. تظاهرات بالینی DVT بر حسب نوع ماده مخدر مصرفی تفاوت معنی‌داری داشت ($P = 0/002$). از 77 بیمار هیچ یک گرفتاری اندام فوقانی نداشته و همگی گرفتاری اندام تحتانی داشتند. از 41 بیمار مصرف کننده هروئین، 28 نفر گرفتاری پای چپ و 13 نفر گرفتاری پای راست و از 27 مصرف کننده تریاک، 14 نفر گرفتاری پای چپ و 13 نفر گرفتاری پای راست را گزارش کردند.

نتیجه‌گیری: عوامل خطر زیادی دارد و اعتیاد یکی از مهم‌ترین آن‌ها است که این مسأله باید توسط کارکنان بهداشتی و پزشکان مورد توجه قرار گیرد.

واژگان کلیدی: ترومبوز ورید عمقی، شیوع، سوء مصرف مواد مخدر تزریقی، اعتیاد

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