University Heart Journal
Vol. 11, No. 1, January 2015

ORIGINAL ARTICLES

Socio-Demographic Characteristics of Patients Presenting to the Vascular Emergency Department of National Institute of Cardiovascular Diseases (NICVD)

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Abstract:

Emergency department of vascular surgery of National Institute of Cardiovascular Diseases (NICVD) is rendering service for the patients suffering from vascular trauma since 2001. Data regarding this practice of emergency services is rarely published. This paper aims to provide the epidemiological characteristics of patients presenting the vascular emergency department of NICVD between 01/9/14 to 30/09/14. This study is intended to benefit the policy makers, healthcare providers in Bangladesh to promote and define the specialty of emergency vascular department and to allocate resources more effectively to address country's acute care needs. In total sixty four (64) patients was attended in this 1 month. The male to female ratio was 60:4 with age range from nine to sixty four years (mean age 30.8years). Among them thirty nine percent patients belong to low socioeconomic class, thirty one percent from middle class and others from affluent family. Forty patients (62.5%) were referred from various institute of Dhaka city and rest from outside Dhaka. Seventy five percent patients came by ambulance, eight percent by private vehicles and rest by other means. Fifty eight patients (90.62%) came with referral papers from other health institutes, where there is no vascular surgery department. Most common cause of referral was vascular trauma (78.12%), other causes of referral were complicate vascular aneurysm (7.8%) and vascular thrombosis (14.06%). The time since injury and seeking treatment for vascular surgery ranged two hours to six days. Mean time was 10.3 hours. Forty cases (62.5%) sustained vascular trauma by accident with sharp cutting objects during occupational and house hold activities, assault (stab injury, blunt injury and gunshot) ten cases (15.62%), road traffic accident seven cases (10.93%), intravenous drug abusers three cases (4.68%), accidentally fall from height three cases (4.68%) and post operative complication one cases (1.56%). This study demonstrates that eighty eight percent study populations presented with arterial injuries and only twelve percent with venous injuries. Associated injuries (tendon, nerve, muscle, fracture of bones and joints dislocation) were present in fifty six patients (87.5%). Most common artery that was injured was radial artery. Vascular Injuries were

treated with end to end anastomosis in twenty five patients (36.6%), ligation of vessels in twenty three patients (35.9%), fasciotomy was done in eight patients (12.5%) , embolectomy (fogerty) was done in four patients (6.25%) ,. aneurysmectomy was needed in two patients (3.1%) and interposition venous graft was used in two cases (3%).

The emergency department of vascular surgery of National Institute of Cardiovascular Diseases (NICVD) is taking the entire burden with their small resources to ensure the best quality care for the management of the patients with vascular injuries. The data can inform and guide the allocation of national resources towards emergency care, injury prevention campaigns, emergency service evaluation and clinical guideline development.

Key words: Emergency department, vascular surgery, National Institute of Cardiovascular Diseases (NICVD).

Introduction:

Vascular surgery is a surgical specialty of that is dedicated to the treatment of patients with disease of the arterial, venous and lymphatic system (excluding intra cranial and coronary arteries). Emergency departments play a significant role in acute health care system. Their services are very demanding during emergency and disaster management[1]. From the public health point of view emergency departments serve as a window of the world through which population health could be viewed.

The emergency department of vascular surgery of NICVD is a pivotal constituent of Bangladesh health care system.

In NICVD separate vascular surgery unit was established in 2001[2]. It is established for the treatment of patients with various vascular pathologies, such as vascular trauma, rupture aortic aneurysm or acute arterial occlusion, that prompt urgent hospital admission and vascular surgery. At the same time, it is frequented by patients suffering from chronic vascular disease, such condition include for instances, chronic intermittent claudication, varicose veins, lymphoedema or lower extremity infections.

In Bangladesh, epidemiologic data on emergency center clinical presentations have rarely been recorded or published. This paper aims to provide the epidemiological characteristics of patients presenting the vascular emergency department of NICVD from 01/09/14 to 30/09/14. This study is intended to benefit the policy makers, healthcare providers and public health providers of Bangladesh to promote and define the speciality of emergency vascular department and to allocate resources more effectively to address country's acute care needs.

Materials and methods:

We studied the epidemiological characteristics of all patients presenting to Vascular emergency department of National Institute of Cardiovascular Diseases and Hospital (NICVD), Sher-E-Bangla Nagor, Dhaka between 01/09/14 to 30/09/14. It is an observational study. Patient records were studied on day to day basis. Information were collected from history sheet including age, sex, presenting symptoms, socio-economic condition, referred from and cause of referred, sites and mode of injury, mode of attendance (private vehicle, ambulance, physician referral, referral from other hospital of Dhaka or rest of the country) and underlying disease and treatment. The collected data were organized, tabulated and statically analyzed using SPSS soft ware.

Results:

In total sixty four patients attended at the emergency department of vascular surgery over one month period from 1-09-2014 to 30-09-2014. The male to female ratio was 60:4 with age range at nine to sixty four years (mean age 30.8years).Among them thirty nine percent patients belong to low socioeconomic class, thirty one percent from middle class and others from affluent family. Forty patients (62.5%) were referred from various institute of Dhaka city and rest from outside Dhaka. Seventy five percent patients came by ambulance, eight percent by private vehicles and rest by other means. Fifty eight patients (90.62%) came with referral papers from other health institutes, where there is no vascular surgery department. Most common cause of referral was vascular trauma (78.12%), other causes of referral were vascular aneurysm (7.8%) and thrombosis (14.06%) (Table-1). The time since injury and seeking treatment for vascular surgery ranged two hours to six days. Mean time was 10.3 hours. This study demonstrates that eighty eight percent study populations presented with arterial injuries and only twelve percent with venous injuries. Most common artery that was injured was radial artery (Table-2). Forty cases (62.5%) sustained vascular trauma by accident with sharp cutting objects during occupational and house hold activities, assault (stab injury, blunt injury and gunshot) 15.62 percent, road traffic accident 10.93 percent, intravenous drug abusers 4.68 percent, accidentally fall from height 4.68 percent and post operative complication 1.56 percent (Table-3). Associated injuries (tendon, nerve, muscle, fracture of bones and joints dislocation) were present in fifty six patients (87.5%)..Vascular Injuries were treated with end to end anastomosis in twenty five patients (36.6%), ligation of vessels in twenty three patients (35.9%), fasciotomy was done in eight patients (12.5%), embolectomy (fogerty) was done in four patients (6.25%), aneurysmectomy was needed in two patients (3.1%) and interposition venous graft was used in two cases (3%) (Table-4).

Table-I

Description of the study population

Demographic variables	No of patients (n=64)	Percentage (%)
Age (in year)		
Between 5 and <14	04	6.25%
Between 14 and <25	20	31.25%
Between 25 and <50	30	46.87%
50 and over	10	15.62%
Sex		
Male	60	93.75%
Female	04	6.25%
Reference		
Referred	58	90.625%
Self	06	9.37%
Referred from		
Institute of Dhaka city	40	62.5%
Other then Dhaka city	24	37.5%
Social-economic condition		
High	05	7.8%
Middle	20	31.25%
Low	39	60.93%
Most common cause for referred		
Vascular trauma	50	78.12%
Vascular aneurysm	05	7.8%
Thrombosis of vessel	09	14.06%

Table -I shows the demographic variables, source of referral and cause of referral.

Table-II

Site of vessels injury

Site of injury	No. of patients	Percentage (%)
Artery (n=64)		
Radial artery	22	44%
Ulnar artery	08	16%
Brachial artery	05	10%
Superficial femoral artery	03	06%
Popleteal artery:	02	04%
Arteria Dorsalis pedis	01	02%
Posterior tibial artery:	03	06%
Vein (n=64)		
Cephalic vein	03	06%
Superficial femoral vein	01	02%
Anticubital vein	01	02%
Femoral vein	01	02%
Aneurysm(n=5)		
Brachial artery	02	40%
Superficial femoral artery	02	40%
Radial artery	01	20%

Table-II shows the type, site of vessels involved

Table-III

Mode of injury (n=64)

Mode of injury	No of patients (n=64)	Percentage
Accidental with sharp cut objects	40	62.5%
Physical assault (With sharp / blunt objects/gun- shot)	10	15.62%
Road traffic accident	07	10.93%
Intravenous drug abuse	03	4.68%
Fall from height	03	4.68%
Post-operative complication	01	1.56%

Table-III shows the mode of injuries.

Table-IV

Mode of repair of injuries (n=64)

Mode of repair of injuries	No of patients (n=64)	Percentage (%)
Ligation of vessels	23	39.06%
End to end anastomosis	25	35.90%
Interposition venous graft	02	3.00%
Embolectomy (fogerty)	04	6.25%
Aneurysmectomy	02	3.10%
Fasciotomy	08	12.50%

Table-4 shows the type of surgical management done.

Discussion:

Vascular trauma is one of the most challenging aspects in care of the injured patient presenting a unique array of problem in diagnosis, decision making and surgical technique. National Institute of Cardiovascular Diseases is the only center in Bangladesh equipped with facilities to deal with those vascular trauma emergencies[2]. Vascular injuries have become increasingly important now a day. Industrialization, fast speed means of transportation, use of firearms, ever growing violence and intravenous drug abuse have turned traumatic vascular lesion into common place events. The actual frequency of vascular injuries worldwide is difficult to quantity[3]. Behram Khan Kakar (2004) reported 98.05 percent of patients being male in his study of 155 patients. In this study a male predominance is also seen and it is 93.75 percent. Mean age of the patients is 30.8 years. Vascular injuries in infants and children are rare. Our study shows that about 78.12 percent patients attended in vascular emergency department of National Institute of Cardiovascular Diseases due to vascular trauma. This prevalence of traumatic injuries reflects the clinical experiences of the authors working at NICVD and is predominantly associated with accidental injuries due to their occupation or house hold works, social violence and road traffic accident. According to Chandra, road traffic accident is the most common cause of vascular injuries at Botswana [4.] Our study showed that occupational accidents are the most common cause of vascular injuries. This study reflects that occupational safety should be employed in the industrial sectors. Health and safety program should be promoted to prevent these injuries[5]. Crimes of violence are becoming more prevalent in our country. This study also said that 15.62 percent of the vascular injured patients was victim of assault with sharp or blunt weapon or gunshot. So public health policies should be built up to educate these groups. We also found that 10.93 percent patients were injured due to road traffic accident. This high burden of road traffic accident highlights the need to improve road safety and the acute management of trauma.

This study reveals that 4.68 percent patients of the study group were intravenous drug abusers. They developed aneurysm of vessels .In patients presenting with arterial pseudoaneurysm, surgical management should be aimed at restoration of arterial continuity whenever feasiable[6].This reflects that the incidence of intravenous drug abusers with vascular complication is increasingly at a alarming rate in Bangladesh.

In our study 62.5 percent patients were referred from the tertiary health centers of Dhaka city and 37.5 percent

patients from outside Dhaka. So there is a great burden in vascular surgery department of NICVD to sought out this challenging problems as well as safe the lives and limb threatening emergency conditions. Regionalization of services is a viable model to increase access to emergent care[7]. Of note, the majority of presenting patients belong to the less affluent parts of society. Such subjects resort to emergency departments because they cannot effort the private health care. This agrees with previous reports from other countries as well [8,9]. In this observation 75 percent patients came by ambulances that were referred from other health institute, though it is not a free service from government. In Australia, this transport service is free of cost [10]. So our patients are suffering from extra economical burden.

Gupta et al (2009) have documented that femoral artery being the most common vessels of lower limb to be injured [11]. Our study shows that radial artery (44%) is the most common artery to be injured .The rarity of isolated venous injury reflected in civilian practice was 15 percent [12], during the Croatian war 12 percent as well as in this study 12 percent. This observation must be tempered by the understanding that venous injuries might be under diagnosed or under reported.

The key principles of the treatment of traumatic vessels include immediate control of bleeding and reestablishment of distal blood flow. The first option should be the primary repair of the lesion at an anatomical site by ligation of vessels, end to end anastomosis.

However interposition venous graft is also recommended when primary repair is not possible. Different published reports have been suggested the use of fasiotomy, particularly in the presence of profound soft tissue damage and concomitant arterial and venous trauma [13]. In this study, we found that all the treatment options mentioned above are available at National Institute of Cardiovascular Diseases. Our study also reflects that 87.5 percent patients of vascular injuries were associated with other injuries like tendon, nerve, muscle and bone fracture etc. So a multidisciplinary approach is needed for the total management of those patients.

This study has some limitation; these are related with analysis of diagnosis of individual patients. Multiple diagnoses are often coded for individual presentations. Here we didn't evaluate the severity of the injuries. This observation has done with a short period that is only one month. Patients were not followed up to see the outcome of treatment.

Conclusion:

This study provides the first description of patients presenting to the emergency department of vascular surgery of National institute of cardiovascular diseases (NICVD). This department is taking the entire burden with their small resources to ensure the best quality care. The data can inform and guide the allocation of national resources towards emergency care, injury prevention campaigns, emergency service evaluation and clinical guideline development.

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