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# DEEP VEIN THROMBOSIS IN PELVIC AND FEMORAL FRACTURES IN EARTH QUAKE VICTIMS

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## ABSTRACT

***Objective:*** The aim of this prospective cum descriptive study was to determine the frequency of deep vein thrombosis using Duplex ultrasound scan, in a group of earth quake victims of 08 October, 2005. All these patients belonged to the high mountain northern areas of Pakistan and were admitted in Combined Military Hospital Rawalpindi with pelvic and/ or femoral fractures without additional risk factors for DVT. None of the patients had prior thromboprophylaxis.

***Place and Duration:*** Study was conducted in thirty female patients admitted in Family wing of Combined Military Hospital Rawalpindi from Oct 2005 to Feb 2006. Although we managed about 75 such cases, only 30 could be assessed for DVT by duplex ultrasound scan partly due to excessive work load on part of Ultrasound department but also because of early post operative mobilization of the patients as per policy, thus offering little chance of having positive results.

***Results:*** Out of thirty patients studied, DVT was found in 01(3.3%) patient, who belonged to Balakot and had pelvic fracture. Clinically she was asymptomatic and had no signs of DVT, but her duplex scan revealed calf veins involvement on the right side, with extension of the thrombus in to the femoral veins as well. Another patient with bilateral upper femoral fractures had painful swelling of both thighs, but her duplex scan for DVT was normal.

***Conclusion:*** The percentage of DVT observed in patients belonging to the northern areas is low in comparison to both our urban population research data as well the internationally conducted studies. Factors responsible might be dietary, racial or geographical, either alone or in combination, which need to be determined in focused, prolonged studies.

**Keywords:** Earthquake victims, pelvic and femoral fractures, deep vein thrombosis

## INTRODUCTION

Approximately million patients are diagnosed with DVT each year and another 600,000 are diagnosed with pulmonary embolism (PE) [1]. Even in the absence of pulmonary embolism, DVT may cause significant morbidity resulting from chronic swelling, ulceration, debilitating pain and future risk of recurrent DVT and pulmonary embolism [1-3]. Approximately 50% of patients with documented DVT have perfusion defects on nuclear lung scanning and coexistent venous thrombosis is found in approximately 70% of patients with confirmed P.E [1-4]. Although early thrombi may form in the iliac and femoral veins, the commonest site for the development of DVT is in the calf [5]. Since DVT is considered to be less common in Asian patients, its study in this population has, in general, attracted less attention [6] and the present endure was intended to look into the frequency of deep vein thrombosis using duplex ultrasound scan in a group of earth quake victims of 8 October, 2005.

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## PATIENTS AND METHODS

A prospective cum descriptive study was carried out from Oct 2005 to Feb 2006 at Family wing of Combined Military Hospital Rawalpindi. Thirty patients were selected by purposive sampling. Mean age of the patients was 40 years. All the patients belonged to the northern mountain bound belt including Balakot and MuzaffarAbad, the areas most severely struck by the devastating earth quake on 8th October, 2006. Majority of these patients belonged to the lower socioeconomic class, usually residing at heights and moving up and down the hills as daily routine, and consuming maze as the usual staple diet. Patients having fractures other than pelvis and/or femur were not included in the study, so were the operated, mobilized patients for the above mentioned fractures. Young's classification of pelvic fractures was followed as the management criteria after ascertaining the type of the fracture. Fractures encountered were mainly anteroposterior compression fractures, vertical shear fractures or lateral compression fractures, either alone or in combination. A detailed history, including mechanism of injury, was taken in each patient, followed by thorough physical examination (table-1). Base line laboratory investigations were performed and radiographs of the involved body region were taken. Duplex ultrasound scan was performed in each patient. Time interval between injury and the scan varied from one to six weeks. None of the patients had added risk factors for developing DVT i.e. varicose veins, use of oral contraceptive pills, previous history of DVT, obesity, malignancy and thrombophilia. One patient with stable pelvic fracture and fracture right tibia, however had 34 weeks pregnancy, she had negative scan for DVT, was managed conservatively and had uneventful recovery. These patients had no thromboprophylaxis or special nursing care for prevention of DVT. Data was analyzed using SPSS version 11.0 and percentages and mean were used to describe the data.

## RESULTS

Thirty patients were included in the study, having mean age of 40 years. Pelvic fractures were found in 17(56.7%) patients while remaining 13(43.3%) patients had femoral fractures. DVT was found in 01(3.3%) of the thirty patients (table-2), which is in accordance with a study carried out at Aga Khan University, Karachi [7]. The affected patient, aged 32, belonged to Balakot and had pelvic fracture which had already been managed with external fixator. She was referred to our hospital three weeks after the earth quake. Clinically she was asymptomatic and had no signs of DVT which include low grade fever, tenderness in the leg along the lines of the deep venous system, swelling of the affected leg with pitting edema, limb girth increase, increased skin temperature, distension of superficial veins in the leg and color changes (red or purple) with severe venous obstruction, but her duplex scan revealed calf veins involvement on the right side, with extension of the thrombus in to the femoral veins as well. Another patient with bilateral upper femoral fractures had painful swelling of both thighs, but her duplex scan for DVT was normal and swelling subsided with non weight bearing physiotherapy. The patient was put on oral anticoagulants (tab warfarin), with International Normalized Ratio maintained between two to three times the normal, and the follow up scan, performed 4 weeks later, showed complete resolution of the thrombus. She remained hospitalized for 08 weeks, external fixator remained in place for 6 weeks, after which it was removed and she was encouraged to mobilize and have regular physiotherapy to prevent the recurrence.

## DISCUSSION

In a study it is reported that the incidence of DVT is 2% in major surgical procedures by using fibrinogen up take test [8]. In another study carried out at Aga Khan University Hospital, a 3.3% rate of venous thromboembolism was found in admitted

**Table-1: Clinical features of DVT**

| Symptoms |
|---|
| Pain and swelling of the affected leg. |
| Chest symptoms such as dyspnoea, pain, or haemoptysis. |
| Signs |
| Low grade fever |
| Tenderness in the leg along the lines of the deep venous system |
| Swelling of the affected leg with pitting edema, limb girth increase |
| Increased skin temperature |
| Distension of superficial veins in the leg |
| Color changes (red or purple) with severe venous obstruction |

**Table-2: Demographic distribution of patients**

| Residence | Age | Fracture Site Involved | Incidence of DVT |
|---|---|---|---|
| AJK | 22 | Pelvis | DVT Not Found |
| AJK | 39 | Pelvis | DVT Not Found |
| AJK | 33 | Femur | DVT Not Found |
| AJK | 24 | Pelvis | DVT Not Found |
| AJK | 40 | Pelvis | DVT Not Found |
| AJK | 45 | Femur | DVT Not Found |
| Balakot | 23 | Pelvis | DVT Not Found |
| AJK | 50 | Femur | DVT Not Found |
| AJK | 27 | Pelvis | DVT Not Found |
| AJK | 41 | Femur | DVT Not Found |
| Balakot | 30 | Pelvis | DVT Not Found |
| AJK | 30 | Femur | DVT Not Found |
| AJK | 29 | Pelvis | DVT Not Found |
| AJK | 43 | Femur | DVT Not Found |
| AJK | 59 | Pelvis | DVT Not Found |
| AJK | 42 | Femur | DVT Not Found |
| Balakot | 51 | Femur | DVT Not Found |
| AJK | 72 | Femur | DVT Not Found |
| Balakot | 52 | Pelvis | DVT Not Found |
| AJK | 23 | Pelvis | DVT Not Found |
| AJK | 30 | Pelvis | DVT Not Found |
| AJK | 58 | Femur | DVT Not Found |
| AJK | 31 | Pelvis | DVT Not Found |
| AJK | 60 | Pelvis | DVT Not Found |
| Balakot | 35 | Pelvis | DVT Not Found |
| AJK | 57 | Femur | DVT Not Found |
| AJK | 75 | Femur | DVT Not Found |
| Balakot | 32 | Pelvis | DVT Found |
| Balakot | 37 | Pelvis | DVT Not Found |
| AJK | 61 | Femur | DVT Not Found |

cases [7]. Similarly studies conducted at various Asian centers in patients suffering from orthopedic & general surgical problems revealed DVT rate ranging from 3% to 19.1% [9-11] which appeared to be less than in Caucasian populations where post surgical DVT rates ranged from 6% to 35% [12]. During 2001-2002, a study was conducted in Pakistan Institute of Medical Sciences (PIMS), Islamabad, to evaluate the incidence of DVT in the post traumatic hip, femur and knee surgery. Out of 100 patients 3 patients were found to have positive evidence on compression sonography conducted between 3rd and 10th postoperative days. In this trial 9 % patients were below the age of 40 and all patients received combined physical and pharmacological (Low molecular weight heparin) prophylaxis post-operatively, without having any control group [13].

## CONCLUSION

The percentage of DVT observed in our study is low in comparison to both international as well as national research data which is a significant finding, because none of our patients had thromboprophylaxis. More research, however, should be done to verify the findings of this study, but there might be some dietary, racial or geographical factors responsible for this low percentage which need to be probed in.

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