

FREQUENCY OF DIFFERENT CAUSES OF PAINFUL SWOLLEN LEG IN PATIENTS REFERRED FOR SONOGRAPHIC EXAMINATION AT A TEACHING HOSPITAL

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ABSTRACT

Objective: To determine the frequency of different causes of painful swollen leg in patients referred for sonographic examination at a teaching hospital.

Methodology: This was a descriptive study, carried out at the Department of Radiology, Lady Reading Hospital, Peshawar from April 2015 to September 2015. A total of 241 consecutive patients presenting with painful swollen lower limb from 23 to 85 years of age of both sexes referred to Department of Radiology for ultrasound were included in the study. Each of these patients underwent sonographic examination. Toshiba Nemio 20 Color / Power Doppler ultrasound machine having 7.5 MHz linear probe were used.

Results: Out of 241 patients, 33.2% were male and 66.8% were female. Mean age of the patients was 58.09 years. The causes of painful swollen leg were DVT 51.9%, intramuscular abscess 12%, cellulitis 9.5% and ruptured baker's cyst in 8.7% of patients.

Conclusion: Deep vein thrombosis is the commonest cause of painful swollen leg in our population.

Key Words: Painful Swollen Leg, Deep Vein Thrombosis, Cellulitis; Ultrasonography, Doppler Ultrasound

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INTRODUCTION

Painful swollen leg may be due to a variety of underlying causes. The most common differentials are deep venous thrombosis (DVT), cellulitis, hematoma and ruptured Baker's cyst. Other causes may include muscle contusions, abscess, arterial aneurysms, sarcomas and Achilles' tendonitis^{1,2}.

Ultrasound is a very precise device for accurately identifying non-traumatic painful swollen leg. It also has the additional benefits of being least expensive, easily available, portable, convenient, lacking radiation and having real time imaging capabilities³.

On sonographic examination, DVT is considered commonest cause (44.8%) of patients with painful swollen leg⁴. Batool et al similarly reported deep vein thrombosis in 46 % of patients⁵. The most frequent non-vascular etiology observed on sonography is considered to be Baker's cyst, being reported in 3% of patients⁶. Clinically both DVT and ruptured Baker's cyst may present as painful swollen leg⁷. Moreover, both of these can be present in 3% of patients⁸.

Accurate diagnosis is very vital in a patient presenting

with painful swollen leg because blind anticoagulation without radiologic confirmation can have disastrous consequences. Since no data regarding the frequency of different causes of painful swollen leg is available in the local medical journals, the results of this study will be very helpful to the physicians and other health professionals to understand the probability of certain diagnoses in patients presenting with painful swollen leg.

METHODOLOGY

This study was carried out in the Department of Radiology, Lady Reading Hospital, MTI Peshawar from 1st April 2015 to 30th September 2015. Through a descriptive cross sectional study design, a total of 241 patients presenting with painful swollen lower limbs and subjected to ultrasound to identify underlying causes. Standard protocol for musculoskeletal and venous ultrasound (grey scale and color / power Doppler) was adopted. Nemio-20 ultrasound machine (with color / power Doppler functions) and 3.5 MHz curvilinear and 7.5 MHz linear probes were used. All patients with history and clinical features suggestive of soft tissue tumor of calf were biopsied. For quantitative variables mean \pm standard deviation was calculated, like age etc. For sex, male-to-female ratio was calculated. For other quali-

tative variables like different causes of painful swollen leg on sonographic examination, frequency and percentages were calculated. The results were expressed / presented through frequency tables and graphs. All the data were analyzed by using computer program, SPSS version 20.

RESULTS

A total of 241 patients presenting with painful swollen leg and referred to ultrasound department from OPD were included. There were 161 (66.8%) females and 80 (33.2%) males in our sample. (Figure 1)

Minimum age of the patients was 23 years and maximum age was 85 years. The mean age was 58.09 years with a standard deviation of 15.71. Age distribution is shown in Table 1.

Table 2 demonstrates various findings on sonographic examination of the patients presenting with painful swollen leg. Deep vein thrombosis was found in 125 patients (51.9%).

DISCUSSION

It is of paramount importance to accurately diagnose the underlying causes of painful swollen leg as these may mimic each other clinically^{9,10}. Dynamic assessment is possible with real time imaging capabilities of ultrasound which is helpful in diagnosing and differentiating several vascular disorders^{11,12} and is considered a superior diagnostic modality in painful swollen legs¹²⁻¹⁴. However, therapeutically these all are different.

While stratifying the findings on sonographic examination with regards to gender, it was observed that most of the findings were seen in female gender perhaps since their predominance in the sample as well

as high prevalence in female population. Deep vein thrombosis was found predominantly among women compared to men (60.2% vs 35%) however, intramuscular abscess and cellulitis was found more in men than women (15% vs 10.5%) (25% vs 1.9%) respectively. The rest of the findings were more or less same in both gender (Table No. 3)

Ball reported the frequency of the various common causes of unilateral leg swelling as follows: 16 to 30 % for deep vein thrombosis, 6 to 9 % for cellulitis, 6 to 7 % for muscular injury, 5 to 7 % for superficial thrombosis and 2 to 6 % for ruptured Baker’s cyst^{15,16}.

Batool et al found deep venous thrombosis (DVT) as the cause of painful swollen leg in 46% of the patients⁵. In our study, we found DVT in 51.9% patients and was the commonest cause of painful swollen leg.

As the age advances, the DVT risk is elevated^{5,17}. Whereas in our study too, it was most frequent in the 25-75 years age group. In study by Vucaj-Cirilović et al¹⁸, 860 patients were examined over a period of 2 years by duplex Doppler ultrasound, and among these, 619 (72%) were female and 241 (28%) male, with the age-range of 16-91 years (mean 56.2).

The life-time prevalence of DVT is 3.1% and increases towards older age groups, and it is higher in female (3.5%) compared with men (2.4%)¹⁹. Patients with DVT had a mean age of 58 years. Like other studies, majority of our patients were >50 years (71.2%). There were 16 (33.2%) male patients and 15 (66.8%) female patients. We noticed an increasing of DVT with age only in females; swollen, painful limb was the commonest presentation.

Ruptured Baker’s cysts (also known as pseudo-throm-

Figure 1: Gender wise distribution of sample (n=241)

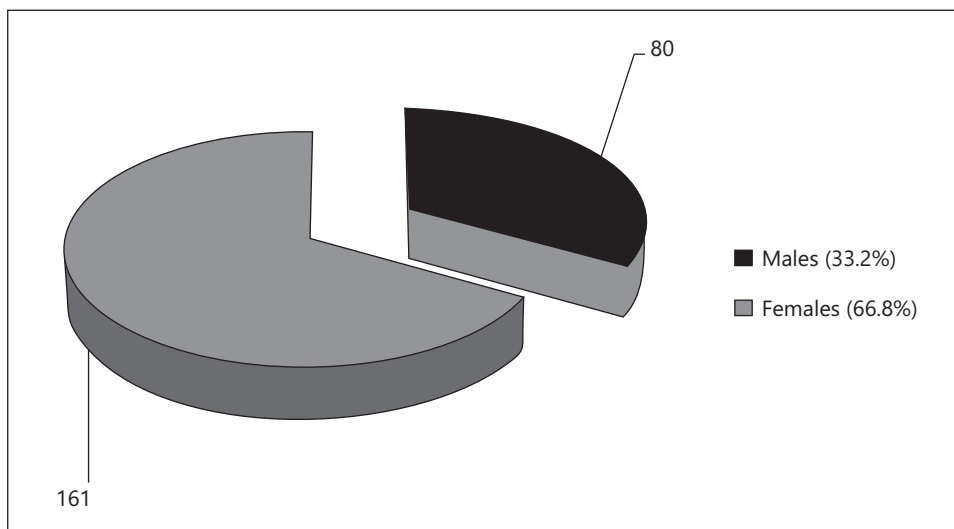


Table 1: Age distribution of sample (n=241)

Age ranges [in years]	No. of cases	Percentage
23-50	55	22.8
51-75	113	46.9
>75	73	30.2
Total	241	100%

Table 2: Findings on sonographic examination (n=241)

Mode	No. of patients	Percentage
Deep vein thrombosis	125	51.9
Tendon tear	19	7.9
Ruptured baker cyst	21	8.7
Intramuscular hematoma	16	6.6
Intramuscular abscess	29	12
Popliteal artery aneurysm	5	2.1
Cellulitis	23	9.5
Soft tissue sarcoma	3	1.2
Total	241	100

Table 3: Gender wise stratification of the findings (n = 241)

Mode	Male	Female	Total
Deep vein thrombosis	28 (35%)	97 (60.2%)	125
Tendon tear	6 (7.5%)	13 (8.0%)	19
Ruptured baker cyst	5 (6.2%)	16 (9.9%)	21
Intramuscular hematoma	6 (7.5%)	10 (6.2%)	16
Intramuscular abscess	12 (15%)	17 (10.57%)	29
Popliteal artery aneurysm	1 (1.2%)	4 (2.5%)	5
Cellulitis	20 (25%)	3 (1.9%)	23
Soft tissue sarcoma	2 (2.5%)	1 (0.6%)	3
Total	80	161	241

Table 4: Age group wise stratification of the findings (n = 241)

Mode	23-50 years	51-75years	>75 years	Total
Deep vein thrombosis	5 (9.1%)	86 (76.1%)	34 (46.6%)	125
Tendon tear	14 (25.4%)	3 (2.6%)	2 (2.7%)	19
Ruptured baker cyst	11 (20%)	4 (3.5%)	6 (8.2%)	21
Intramuscular hematoma	8 (14.5%)	4 (3.5%)	4 (5.5%)	16
Intramuscular abscess	11 (20%)	7 (6.2%)	11 (15.1%)	29
Popliteal artery aneurysm	2 (3.6%)	1 (0.9%)	2 (2.7%)	5
Cellulitis	4 (7.3%)	7 (6.2%)	12 (16.4%)	23
Soft tissue sarcoma	0 (0%)	1 (0.9%)	2 (2.7%)	3
Total	55	113	73	241

bophlebitis) may present in the emergency department and need to be diagnosed and differentiated from DVT²⁰. Sato et al⁴, reported ruptured Baker's cysts in 03 patients, with an incidence of 2.4%, while in our study it was observed in 8.7 %.

CONCLUSION

Deep vein thrombosis is the most frequent cause of painful swollen leg followed by cellulitis, abscesses and baker's cyst.

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CONTRIBUTORS

NUH conceived the idea, planned the study, and drafted the manuscript. MI and KHA helped acquisition of data and did statistical analysis. All authors contributed significantly to the submitted manuscript.