CHILBLAINS AT ABBOTTABAD, A MODERATELY COLD WEATHER STATION

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Background: Chilblains are quite often seen in various parts, in particular cold weather areas of Pakistan. Unfortunately, no studies have so far been carried out in Pakistan, to determine epidemiological aspects of chilblains. The objective of this study was to see the epidemiological patterns of chilblains at a moderately cold weather station. **Methods:** The study was conducted at Dermatology out patient department of Combined Military Hospital, Abbottabad from 1 Dec 2004 to 31 Mar 2005. All the patients fulfilling clinical criteria for the diagnosis of chilblains were registered. Every patient was interviewed in detail followed by thorough physical examination. Complete Blood Count, Urine Routine Examination and Anti Nuclear Factor were carried out in only those patients, having the disease of more than 3 years duration. A pre-designed proforma was filled separately for each patient. **Results:** Out of 111 patients, 67 (60.4%) males and 44 (39.6%) females were registered with the diagnosis of chilblains. Fifty nine (53.2%) patients were locals and 52 (46.8%) were non locals. Out door workers were 75 (67.6%). Onset in majority of the patients (42.3%) was in the age group 11-20 years. Family history of chilblains was present in 25 (22.5%) patients and 8 patients (7.2%) were smokers. The disease of longer duration was more common in females and locals. **Conclusion:** At moderately cold weather areas, out door workers and young adolescents are more likely to develop Chilblains. The disease of longer duration is more common among females and local residents. On the other hand, first episode or the disease of shorter duration is more common among non locals at moderately cold weather stations because of poor acclimatization and inadequate protection.

Keywords: Chilblains, perniosis, cold weather injuries.

INTRODUCTION

Exposure to cold can produce a variety of injuries that occur as a result of man's inability to adapt to cold. Chilblains or perniosis is a moderately severe form of localized cold injury which occurs after exposure to nonfreezing temperatures and damp conditions.[1, 2] It presents as an inflammatory, erythematous or violaceous, pruritic or painful acral lesions. Pathophysiology of chilblains is largely unknown; however, it represents an abnormal vascular response to cold. Exact incidence of the disease is not known and the frequency of chilblains varies with weather conditions. In England the annual incidence is said to be up to 10% [3] and in France it is 2-6%. [4]

Chilblains may be idiopathic or secondary to an underlying disease, like, chronic myelocytic leukemia, [5] cold agglutinins, cryoglobulinemia, [6] cryofibrinogenemia, macroglobulinemia, dysproteinemia, anorexia nervosa [7] and systemic lupus erythematosus. [8] The direct cause of chilblains in all cases is cold exposure. Although perniosis is generally benign in nature, [9] in selected cases, certain laboratory investigations like complete blood count, erythrocyte sedimentation rate, autoimmune profile, cryoglobulins, cryofibrinogens, cold agglutinins and serum protein electrophoresis may be carried out to rule out associated conditions. Most cases of chilblains resolve within few weeks without any residual effects. However, there is a tendency of recurrence of chilblains every year with the approach of winters. The most important point in the management is prophylaxis with adequate clothing and warm living conditions to avoid exposure to cold. Ultraviolet phototherapy has also been tried as a prophylactic measure with disappointing results, [10] but in weather conditions like ours where sun light and ultraviolet radiations are in abundance, such considerations become irrelevant. Chilblains and other cold weather injuries are preventable in most instances. [11] Risk factors include inadequate clothing, improperly warm living conditions, dehydration, fatigue and previous cold weather injuries. [12] These can usually be prevented by knowledge and education to avoid undue exposure to cold and humidity.

Once the lesions appear, treatment is usually symptomatic with avoidance of further exposure to cold. Many treatment modalities have been tried with variable results. These include re-warming of the affected parts of the body, vasodilator calcium channel blockers like nifedipine, [13] topical minoxidil, [14] prazosin, [15] topical antipruritics and iontophoresis [16] etc.

Patients suffering from chilblains are quite often seen in various parts of Pakistan. Unfortunately, no studies have so far been carried out in the country to determine the epidemiological aspects of

chilblains. The purpose of this study was to determine the frequency of chilblains and epidemiological patterns of involvement in patients reporting sick to dermatology out-patient department of Combined Military Hospital, Abbottabad.

MATERIAL AND METHODS

The study was carried out at Combined Military Hospital, Abbottabad from 01 Dec 2004 to 31 Mar 2005. All the patients reporting sick to dermatology out-patient department of the hospital with persistent painful or pruritic, erythematous or dusky erythematous papules and plaques of less than 3 weeks duration, involving digits or other peripheral parts of the body, during above mentioned period were registered. These patients were interviewed thoroughly and dermatological as well as systemic examination carried out in detail. History included patient's age at presentation as well as at onset of the disease, sex, occupation, permanent residence, time since arrival at the area under study, duration of the disease, duration of present episode of chilblains, family history of chilblains and whether smoker or otherwise. Each patient was also asked for any associated dermatological or systemic illness. Lesions of chilblains were examined in detail to note the site and extent of involvement. In addition, dermatological as well as systemic examinations were carried out in detail to find out any associated disease. Diagnosis of chilblains was based on history and clinical examination. Patients having disease of more than 3 years duration were subjected to Complete Blood Count, Urine Routine Examination and Anti Nuclear Factor. A pre-designed proforma was filled for each patient separately. The findings were entered and analyzed on version 10 of SPSS computer programme. A p value of less than 0.05 was considered significant.

RESULTS

A total of 4666 patients were registered in dermatology out patient department of Combined Military Hospital, Abbottabad during the period from 01 Dec 2004 to 31 Mar 2005. Out of these 4666 patients, 111 (2.37%) were diagnosed to be suffering from chilblains and 89 (80.2%) of these developed the disease during the months of Dec, Jan and Feb. Out of 111 patients, 67 (60.4%) were males and 44 (39.6%) were females. Age at presentation ranged from1 to 73 years with a mean of 26.44 + 17.65 years. Age at onset in majority of the patients (42.3%) was between 11 to 20 years. Seventy five (67.6%) patients were out door workers and 36 (32.4%) were those who would remain indoor most of the time (Table- 1). Fifty nine (53.2%) of the patients belonged to the cold weather area where the study was conducted and 52 (46.8%) were non locals. Eight (7.20%) patients were smokers and family history of chilblains was present in 25 (22.5%) patients (Table- 2). Out of 111 patients, 46 (41.4%) had disease of more than 2 years duration and 65 (58.6%) presented with either first episode or the disease of less than 2 years duration. Chilblains of more than 2 years duration was more common in females (54.5%) and the disease of shorter duration was more common in males (67.2%) (p 0.023). Out of 52 non locals, 40 (76.9%) presented with the disease of less than 2 years duration and among 59 locals, 34 (57.6%) had the disease of more than 2 years duration. (p 0.003). (Table- 3).

Table- 1: Demographic profile of the patients having Chilblains, (n = 111)

Parameters	Number (%)
Age at onset (in years)	
01-10	17 (15.3%)
11-20	47(42.3%)
21-30	19(17.1%)
31-40	07 (06.3%)
41-50	11(09.9%)
>50	10(09.0%)
Gender	
Males	67 (60.4%)
Females	44 (39.6%)
Occupation	
Outdoor workers	**75 (67.6%)**
Soldiers	41(36.9%)
Students	30(27.0%)
Agriculturists	03(02.7%)
Others	01(0.9%)
Indoor workers	**36(32.4%)**
House-wives	16(14.4%)
Office workers	05(04.5%)
No job (Young children, Retired, Elderly etc.)	15 (13.5%)
Residence	
Locals	59(53.2%)
Nonlocals	52 (46.8%)

DISCUSSION

Chilblains or perniosis is a localized cold injury which represents an abnormal response to non-freezing temperatures in humid conditions. In most of the cases, the disease is benign, there are no systemic symptoms and laboratory studies are normal. The physical examination is sufficient for diagnosis.[17]

Chilblains can occur at any age and are said to be more common in females[4, 9]. In our study males were seen more often than females. One of the reasons was that the study was conducted at a

Military Hospital and out of 67 (60.4%) male patients, 41 were serving soldiers and only 26 (23.4%) males were from all other categories as compared with 44 (39.6%) female patients. However, the disease was significantly more common among males in our study. Chilblains have been found to be uncommon in children in a few studies, [6] but others found that the disease is common in children. [3] In our study, 18% of the patients were children, up to 12 years of age.

Table- 2: Associated features on history and examination

	Number (%)
Family History	
	25 (22.5%)
	86 (77.5%)
Smoking	
Yes	08(07.2%)
No	103(92.8%)
Systemic Diseases	
Yes*	08 (07.2%)
No	103(92.8%)
Dermatological Diseases	
Yes**	09 (08.1%)
No	102(91.9%)
Other peripheral vascular diseases	
Yes+	01(0.9%)
No	110(99.1%)

* Ischemic heart disease - 4, Hypertension – 1, Diabetes mellitus – 1, Arthritis – 1, Lumbago - 1

**Eczema– 2, Atopic Dermatitis – 1, Napkin Dermatitis – 1, Psoriasis – 1, Melasma – 1, Alopecia areata – 1, Pityriasis versicolor -1, Beau's lines – 1

+Raynaud's Disease - 1

Table- 3: Duration of chilblains in relation with permanent residence of patients (n=111, local=59, non local=52)

Duration of Chilblains	Permanent Residence	
	Local	Non local
First episode	20 (33.9%)	32 (61.5%)
2 Years	05 (08.5%)	08 (15.4%)
3 Years	12 (20.3%)	03 (05.8%)
> 3 Years	22 (37.3%)	09 (17.3%)

P value: 0.003

The disease in our study was more common in outdoor workers and those relatively more exposed to cold, like soldiers, students and agriculturists, than those less exposed to cold and having sedentary lifestyle like office workers, elderly and young children. Housewives in our set up, although most of the time, remain indoors, are repeatedly and sometimes for prolonged periods exposed to cold, damp conditions because of their house-hold activities. In our study only 16 (14.4%) housewives presented with chilblains.

Viguier et al [8] in a study revealed that chilblains following a chronic course may reveal connective tissue disease and that female sex and persistence of lesions beyond cold seasons were significantly more associated with chilblain lupus erythematosus. One hundred and three patients in our study had no symptoms suggestive of any systemic disease. Only 8 (07.2%) were suffering from systemic illnesses like ischemic heart disease, hypertension, diabetes mellitus, sero-negative arthritis and lumbago. Although, 31 (27.9%) patients, 13 males and 18 females had disease of more than 3 years duration, none had either history of persistence of the symptoms of chilblains beyond winters or the clinical symptoms or signs suggestive of collagen vascular disease. Anti Nuclear Factor was positive in only 2 of these 18 female patients, who had no other clinical or laboratory evidence of collagen vascular disease. All these patients with the disease of more than 3 years duration, however, were advised to have regular follow ups.

First episode and the disease of up to 2 years duration was more common in non locals and the disease of more than 2 years duration was more common in locals. One of the reasons is that a new comer at a cold weather area is neither acclimatized, nor properly equipped to face the weather conditions. As the time passes, the individual learns to protect himself/herself against cold in terms of warm clothing and warm living conditions. Moreover, the reason that non locals with the disease of 3 years duration and more, in our study, were less as compared to the locals, could be that the non locals might have left the area after certain period of time. We found that 31 (59.6%) of 52 non locals were having their first winter at the cold weather station where the study was carried out, 12 (23.1%) had second winter, 5 (9.6%) had third winter and 4 (7.7%) were those living at the station for more than 3 years duration. ($p < 0.001$).

Chilblains are mostly benign and the lesions resolve within a few weeks without any residual effects. However, one needs to be vigilant in chronic cases that persist even beyond winters and while dealing with female patients. Chilblains, like other cold weather injuries is a preventable disease. Treatment must be preventive rather than curative. It is the responsibility of physicians to stress upon the community that prevention is better than cure.

CONCLUSION

At moderately cold weather areas, out door workers and young adolescents are more likely to develop Chilblains. First episode or the disease of shorter duration is more common among non locals at moderately cold weather areas because of poor acclimatization and inadequate protection. The disease of longer duration is more common among females and local residents. Although chilblains are usually benign in nature, patients in particular females, having the disease of longer duration or with persistence of the disease beyond winters, should be thoroughly interviewed, examined and if indicated investigated to rule out any systemic disease, in particular collagen vascular disease. These patients also need to be followed up for prolonged periods.

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