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Dr. Munnaluri Mohan Rao
Associate Professor, Department of DVL, Great Eastern Medical School and Hospital, Ragolu Srikakulam, Andhra Pradesh, India

Dr. Kotha Raghupathi Reddy
Associate Professor, Department of DVL, Gandhi Medical College, Secunderabad, Telangana, India

Dr. Chittla Sravan
Assistant Professor, Department of DVL, MNR Medical College and Hospital, Sangareddy, Telangana, India

Corresponding Author:
Dr. Kotha Raghupathi Reddy
Associate Professor, Department of DVL, Gandhi Medical College, Secunderabad, Telangana, India

Spectrum of dermatological manifestations in systemic diseases

Dr. Munnaluri Mohan Rao, Dr. Kotha Raghupathi Reddy and Dr. Chittla Sravan

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Abstract
Aims: It is a well-known fact that the skin is referred to as the mirror or window to the body. The present study was undertaken with the objectives of knowing the spectrum of dermatological manifestations in systemic diseases.
Materials and Methods: A total of 100 patients with systemic illness presenting with dermatological manifestations were included in the study. Relevant investigations for the diagnosis of systemic illness and dermatological disorders were carried out.
Results: Majority (51%) of the cases belonged to the age group 41-60 years with 54% of the cases having diabetes mellitus, renal and hepatobiliary disorders. Among the 100 cases, the underlying systemic disorder was detected in 21 because of the dermatological manifestations. Various dermatoses observed in patients of diabetes mellitus were xerosis, pruritus, bacterial infections, diabetic bullae, prurigo, fungal infections and diabetic dermopathy. Renal disorders presented with xerosis, acquired ichthyosis, pruritus and pigmentation of the face. Nutritional disorders like pellagra presented with pellagroid dermatitis. AML patients presented with leukemic skin infiltrates. Hypothyroid patients presented with acquired ichthyosis.
Conclusion: A patient of systemic illness can present with both specific and nonspecific dermatological manifestations. Thus an elderly patient presenting with dermatological manifestations in the absence of primary cutaneous diosorders should be investigated for the underlying systemic illness.

Keywords: dermatological manifestations; systemic illness, diabetes mellitus

Introduction

It is a well-known fact that the skin is referred to as window or mirror to the body. It is very much true as many internal ailments are detected by interrogating the various cutaneous signs and symptoms. This has got a tremendous significance in most of the situations as early diagnosis is very valuable in the management of the systemic disease. The skin is the largest and the most visible organ of the body. In some instances, the initial and the most prominent complaints of the patient are related to alterations in the skin and therefore the dermatologist will at times be the first physician consulted. Changes in the skin can be marker for an internal malignant neoplasm. The specific relationship of the cancer with the marker can be variable. For instance, hypertrichosis laniguinosa acquisita can be a marker for many different malignant neoplasms, whereas necrolytic migratory erythema is quite specific for a glucagon- producing tumor of pancreas.

Diabetes mellitus is a common medical disease with sequelae that affect almost every organ system. The skin is no exception, upto one third of patients with diabetes mellitus are estimated to have various cutaneous associations. Although some cutaneous changes seen in patients with diabetes are idiopathic, a number of them are directly attributable to various aspects of the diabetes.

A number of cutaneous stigmata are associated with hepatic disease, but none is specific. But cutaneous symptoms like pruritus and jaundice may be important evidence for considering the diagnosis of hepatic disease. Patients with end stage renal disease frequently manifest with a variety of cutaneous disorders. The nails may also show some changes in patients with chronic renal failure. The “half-and-half” nail may be distinctive to renal failure.

Though thyroid hormone has tremendous impact on activity of integuments, its effects are

more notable during deficiency or excess status. Cutaneous changes accompanying thyroid disease are neither unique nor pathognomonic. However, such cutaneous findings and associations often provide important clues in instances of unsuspected and undetected thyroid disease [1].

The ability to diagnose systemic disorders by means of cutaneous signs has always fascinated physicians. In recent years there has been a renewed interest in this aspect of clinical diagnosis. Just as a full physical examination should be part of a full dermatological assessment, it is important to examine the skin in someone presenting with a systemic illness.

The present study is undertaken to know the spectrum of dermatological manifestations in various internal illness, which enables to make an early diagnosis of the same. Recognition of systemic illness is important in order to ensure that appropriate treatment is provided at the earliest, thus preventing complications.

Materials and Methods

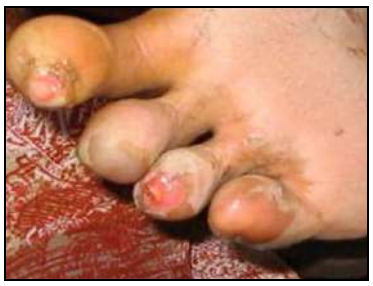
The materials for the present study were drawn from patients attending the outpatient department of Dermatology, Venereology and Leprology and also inpatients referred from other Departments, for a period of 2 years from January 2016 to jaunary 2018. A Total of one hundred patients with dermatological complaints secondary to systemic illness and patients who came with only skin disease in whom the systemic illness was diagnosed later were included in the study after taking the consent. Patients presenting with dermatological complications of systemic disease treatment were also included in this study.

Patients with genetically inherited disorders and patients with HIV infection were excluded from the study.

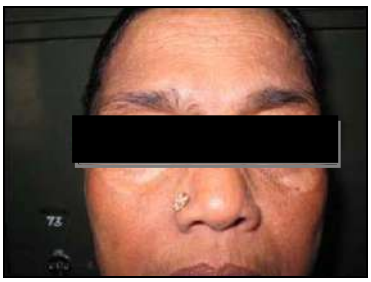
In all the selected patients, detailed history was taken regarding the duration of systemic disease, dermatological symptoms and clinical examination were done. In all cases, relevant investigations pertaining to the systemic illness and dermatological disorders were done.

Investigations were done to diagnose the systemic disorders as Blood routine including hemoglobin, total leukocyte count, differential count, erythrocyte sedimentation rate, Peripheral smear examination, Urine routine examination including sugar, albumin and microscopy, Fasting blood sugar analysis, In diseases of hepatobiliary system, liver function test including biliurubin levels, serum SGOT, SGPT, Serum alkaline phosphatase, and serum protein levels. HBsAg and HCV Tests were also done. Ultrasonography of the abdomen, upper GI endoscopy was done. Based on this, patients were classified into patients with and without portal hypertension. In patients of renal disorder renal function tests were done. This included blood urea nitrogen (BUN), serum creatinine values. Patients having thyroid disorders were subjected to thyroid function test including T3, T4 and TSH levels. Based on this, patients were classified into hypothyroid and hyperthyroidism. In patient of multinodular goiter, fine needle aspiration cytology of the thyroid was made. In patients of hyperlipidemia, a fasting lipid profile analysis was done. This included serum cholesterol, serum triglyceride, serum LDL and HDL levels. In patients of ulcerative colitis, diagnosis was confirmed after colonoscopy and colonic biopsy. In patient of chronic obstructive pulmonary disease, chest x-ray PA view was taken. Internal malignancy was confirmed by relevant investigations pertaining to the system concerned. Gram staining of purulent material, culture and sensitivity of pus were done in bacterial infections. Direct microscopic examination using 10% KOH solution was done in fungal infections. Skin biopsy was done in relevant cases.

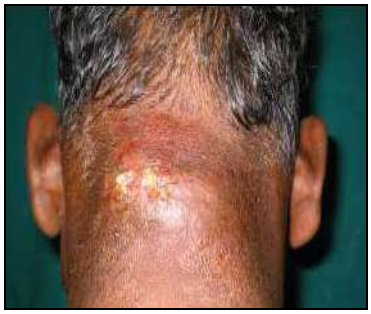
The data thus collected was compiled and analyzed.



a) Bullosa Diabeticorum



b) Xanthelasma in diabetic



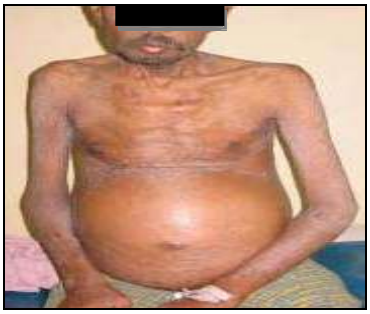


Fig 1: Photos of cases in study

Results

Among 100 patients studied majority of the patients were in the age group of 51-60 years 31(31%) followed by 41-50 years 20(20%), 31-40 years 18(18%). 21-30 years 18(18%), 61-70 years 7 (7%), upto 190 years 4(4%) and ≥ 71 years were 2(2%). The age group between 41-60 years constituted 51% of the study group. 58(58%) were males and 42(42%)

were females. The male to female ratio was 1.38. 79 patients had a diagnosed systemic illness, whereas 21 patients presented with dermatological complaints only and in them diagnosis of systemic illness was made after clinical examination and relevant investigations

Table 1: Systemic Illness that cause Dermatological Manifestations

System Involved/ Disease	Number of patients	Percentage
Diabetes Mellitus	29	29
Renal	18	18
Hepatobiliary	17	17
Thyroid	9	9
Hematopoietic	9	9
Nutritional	7	7
Internal Malignancy	6	6
Metabolic(Excluding Diabetes) Gastrointestinal	2 1	2 1
Respiratory	1	1
Cardiovascular	1	1
Total	100	100

Table 2: Dermatological Manifestations in Diabetic

Dermatological Manifestations	Number of patients (n=29)	Percentage (%)
Xerosis	6	20.7
Pruritus	5	17.2
Bacterial infections	5	17.2
Diabetic bullae	4	13.8
Prurigo	3	10.3
Fungal Infections	2	6.9
Acrochordon	2	6.9
Acquired Ichthyosis Perforating Folliculitis	1 1	3.4 3.4
Xanthelasma Palpebrum	1	3.4
Pruritus Vulvae	1	3.4
Scleredema Diabeticorum	1	3.4
Acanthosis Nigiricans	1	3.4
Granuloma Annulare	1	3.4
Diabetic Dermopathy	1	3.4

Among the 29 diabetics studied, few patients had more than one dermatological manifestation. Various dermatoses noted were, xerosis in 6(20.7), pruritus in 5(17.2%), bacterial infections in 5(17.2%) diabetic bullae in 4(13.8%). Prurigo in 3(10.3%), fungal infections in 2(6.1%), Acrochordon in 2(6.9%), acquired ichthyosis in 1(3.4%), perforating folliculitis, xanthelasma palpebrum, pruritus vulvae, scleredema diabeticorum, acanthosis nigricans, granuloma annulare and diabetic dermopathy was observed in 1 patient(3.4%) each.

3 patients of diabetes had both prurigo and xerosis, one patient had prurigo and folliculitis, one patient had xerosis with ecthyma, one patient had acanthosis nigricans and acrochordon.

Table 3: Dermatological manifestations in renal disorders. (n=18)

Nephrotic Syndrome	Number of Patients	Percentage (%)
Xerosis	1	100
Oral Candidiasis	1	100
Chronic renal failure not undergoing hemodialysis		
Pruritus	1	33.33
Xerosis	1	33.33
Perforating Folliculitis	1	33.33
Chronic renal failure undergoing hemodialysis		
Pruritus	10	71.4
Xerosis	4	28.6
Pigmentation Over The Face	4	28.6
Acquired Ichthyosis	2	14.3
Perforating folliculitis	1	7.1

Patients of renal disease were divided in 3 groups, i.e. patients of nephrotic syndrome, chronic renal failure who were not on hemodialysis, chronic renal failure who were on hemodialysis, since each of this have different dermatological manifestations.

One child of nephrotic syndrome had xerosis and oral candidiasis, this child was on systemic steroids for his systemic illness.

Of the three patients of chronic renal failure who were not on hemodialysis generalised pruritus, xerosis and perforating folliculitis were seen in each patient.

Various skin manifestations observed in patients of chronic renal failure undergoing hemodialysis were pruritus in 10(71.4%), xerosis in 4(28.6%), pigmentation over the face

in 4(28.6%), acquired ichthyosis in 2(14.3%) and perforating follicultis in 1(7.1%) patient.

Few patients on hemodialysis had more than one dermatological manifestation. 1 patient had xerosis, pruritus and pigmentation of the face, one patient had acquired ichthyosis and pigmentation, 1 patient had xerosis and pruritus, one patient had pruritus and acquired ichthyosis, two patients had pigmentation of the face and pruritus.

Table 4: Dermatological Manifestations of Hepatobiliary System (n=17)

Cirrhosis of liver.	Number of Patients	Percentage (%)
Pruritus	5	55.5
Xerosis	4	44.4
Acquired Ichthyosis	1	11.1
Nutritional Dermatosis	1	11.1
Cirrhosis of liver with portal hypertension		
Xerosis	3	75
Acquired Ichthyosis	1	25
Pruritus	1	25
Platynychia	1	25
Koilonychia	1	25
Infective Hepatitis		
Xerosis	3	100
Oral Candidiasis	1	33.3
Fatty liver with distal common bile duct obstruction		
Pruritus	1	100

Patients with disorders of hepatobiliary system were divided into that of 1) cirrhosis of liver 2) cirrhosis of liver with portal hypertension 3) Infective hepatitis and 4) Fatty liver with distal common bile duct obstruction.

Dermatological manifestations observed in patients of cirrhosis of liver were pruritus in 5(55.5%), xerosis in 4(44.4%), acquired ichthyosis in (11.1%) and nutritional dermatosis in 1(11.1%) patients. Changes noted in patients of cirrhosis of liver with portal hypertension were xerosis in 3(75%), platynychia, koilonychia, acquired ichthyosis and pruritus in 1(25%) patient each.

Of the three patients of infective hepatitis, two had xerosis whereas the other had both xerosis and oral candidiasis. One patient of fatty liver with distal CBD obstruction had generalised pruritus.

Table 5: Dermatological Manifestations of other systemic disorders

Thyroid disorders	Number of Patients	Percentage (%)
Acquired Ichthyosis	6	100
Macroglossia	2	33.3
Lateral Madarosis	1	16.7
Thyrotoxicosis		
Moist Smooth Skin	2	100
Pruritus	1	50
Onycholysis	1	50
Multinodular Goitre		
Localised Vitiligo	1	100
Hematopoietic System		
Xerosis	5	55.6
Platynychia	3	33.3
Angular chelitis	2	22.2
Knuckle pigmentation	2	22.2
Glossitis	1	11.1
Koilonychia	1	11.1
Acquired Ichthyosis	1	11.1
Nutritional Disorder		
Pellagroid Dermatitis	5	100
Bitot's Spots	1	100
Follicular Hyper Keratoses	1	100
Nutritional Dermatosis	1	100
Alopecia	1	100
Internal Malignancy		
Acute Myeloblastic Leukemia	2	Metastatic Skin Infiltration
		Ischiorectal fossa abscess
		Ruptured metastatic lymph node ulcer.
Hepato Cellular Carcinoma	1	Pruritus
Carcinoma Cervix	1	Acquired ichthyosis
Carcinoma Stomach	1	Xerosis
Carcinoma Oral Cavity	1	.Contiguous metastasis.
Hyperlipidemia		

Xanthelasma Palpebrum	2	100
Ulcerative Colitis		
Xerosis	1	100
Platynychia	1	100
Chronic obstructive pulmonary disease		
Clubbing	1	100
Pruritus	1	100
Cardiovascular System Keloid At The Site Of Thoracotomy Scar	1	100

All the six patients of hypothyroidism had acquired ichthyosis (100%), whereas 2 had macroglossia (33.3%) and one patient had lateral madarosis (16.7%). Moist Smooth skin, was present in both the patients of thyrotoxicosis and one patient each had onycholysis and pruritus. One patient of multinodular goitre had localised vitiligo over the shins.

Among the 9 patients of anemia the changes observed were, xerosis in 5(55.6%), platynychia in 3(33.3%), Angular chelitis in 2(22.2%), Knuckle pigmentation in 2 (11.1%), glossitis, Koilonychia and acquired ichthyosis in 1(11.1%) patient each.

Few patients had more than one dermatological manifestation, one patient had xerosis, koilonychia and platynychia, one patient had angular chelitis and platynychia, one patient had xerosis and platynychia, and one patient had xerosis and angular chelitis.

All the 5 patients pellagra had pellagroid dermatitis. All the 5 patients were chronic alcoholics, who didn't have bowel or mental symptoms. One patient of vit. A deficiency had Bitot spots and follicular Keratosis. One child of PEM had nutritional dermatitis and alopecia.

Two patients of xanthelasma Palpebrum had hyperlipidemia One patient of ulcerative colitis had xerosis and platynychia.

Discussion

In this study age group between 41-60 years constituted 51% of the study group. This is because the systemic illness like internal malignancy, diabetes mellitus, and renal disorders, are more common in this age group compared to other age groups. 58% were males and 42% females. This correlates with the higher attendance of male patients when compared to the females in our study. 79 patients were diagnosed with systemic illness who presented with dermatological manifestations, whereas the 21 patients came directly to us seeking treatment for the dermatological complaints and were unaware of their systemic illness. The systemic illness was diagnosed after clinical examination and investigations. Among the 21 patients, 6 were of hypothyroidism, 4 of pellagra, 3 of diabetes mellitus, 2 of anemia, 2 of hyperlipidemia, 2 of acute myeloblastic leukemia, one of carcinoma of oral cavity with contiguous metastasis and one patient of Vit. A deficiency. The above findings justify the fact that in some instances, the initial and the most prominent complaints of the patients are related to alterations in the skin and therefore the dermatologist will at times be the first physician consulted.

Therefore it can be said that the present study helped these 21 patients to know about their systemic illness thus enabling them to undergo treatment for the same and to prevent complications.

29 patients in the present study had diabetes mellitus, 18 patients had renal disorders, 17 patients had hepatobiliary disorders, 9 patients had thyroid disorders, 9 patients had disorders of hematopoietic system, 7 patients had nutritional disorders, 6 patients had internal malignancy, 2 pateints had metabolic disorder other than diabetes, 1 patient had gastrointestinal disorder, one patient had respiratory and one patient had cardiovascular system. Thus diabetes mellitus was observed as the commonest systemic disease with cutaneous manifestations. Diabetes mellitus is a chronic metabolic disorder with upto 30% of patients having dermatological manifestations [2].

As shown in study various dermatological manifestations seen in patients of diabetes mellitus were as follows. Xerosis in 6 (20.7%), pruritus in 5 (17.2%), bacterial infections in 5 (17.2%), diabetic bullae in 4 (13.8%), prurigo in 3 (10.3%), fungal infections in 2 (6.9%), acrochordon in 2(6.9%), acquired ichthyosis in 1(3.4%), peforating folliculitis, xanthelasma Palpebrum, pruritus vulvae, scleredema diabeticorum, acanthois nigricans, granuloma annulare and diabetic dermopathy was observed in 1 patients (3.4%). each.

Xerosis was the commonest 6 (20.7%) dermatological finding in our study. Xerosis in diabetics may be due to the normal xerotic process of the elderly or as a consequence of dehydration due to the autonomic nervous system involvement by the disease process.

Pruritus was seen in 5 (17.2%) patients. Though generalised itching is a common symptom of diabetes mellitus, recent studies provide no statistical basis for the same.136-138 Itching seen in elderly diabetics could be a manifestation of xerosis [3].

Bacterial infections like folliculitis, ecthyma and carbuncle were seen in 5 (17.2%) subjects. The mean blood glucose level is the prime predisposing factor which shows a close correlation with the incidence of cutaneous infection.[4] Impaired microcirculation, hypohidrosis and suppression of CMI, trauma and ketoacidosis are thought to be the predisposing factors. Diabetic bullae were seen in 4 (13.8%) patients. Bullae are a rare but specific skin manifestation of diabetes mellitus. The pathogenesis is obscure but possible factors include vasculopathy, neuropathy, disturbance in the carbohydrate metabolism or a combination of these factors [5]. All the 4 patients seen in this study were patients of long standing diabetes with peripheral neuropathy.

Prurigo nodularis was seen in 3 (10.3%) patients. This could be an incidental finding as there are no literature documenting this association [3].

Fungal infections were seen in 2(6.9%) patients. One patient had extensive dermatophyte infection whereas the other had vulvovaginal candidiasis. No increased prevalence of dermatophytic skin infections in diabetics was found in a recent study [5], however fungal infections can act as portals of secondary bacterial invasion and should be treated promptly in diabetics [5]. Vulvovaginal candidiasis has a well-documented association with diabetes mellitus [6] Poorly controlled patients of diabetes are more likely to manifest symptoms of this infection[3] as in our patients.

Acrochordon was present in 2 (6%) of patients. In one study, skin tags were found in 26% of the NIDDM patients who were obese, where as one more study found close association of skin tags with abnormal glucose tolerance, obesity, pseudoacanthonis nigricans and seborrheic keratoses. It is also noted that if skin tags are multiple (>3) and involve multiple sites they can be taken as a marker for diabetes [7].

Acquired ichthyosis was seen in one patient. This may be because of the associated nutritional deficiency seen in diabetes. Perforating folliculitis was seen in one patient. It has been documented that perforating dermatoses are more prevalent in diabetics [8]. Xanthelasma palpebrum was seen in one patient. It has been seen that xanthomas occur in hyperlipidemic states like diabetes [9]. Xanthelasma palpebrum is the most common cutaneous xanthoma observed in one study. Pruritus vulvae was seen in one patient. Localised anogenital pruritus, particularly pruritus vulvae assoicated with moniliasis is more common in diabetics [10] as seen in our patient. Scleredema diabeticorum was seen in one patient. It is a rare disorder of diffuse symmetric induration and thickening of the skin favouring the posterior neck and upper back. Though regarded as rare, 2.9% prevalence was found in one study [11]. It has been noted in long standing diabetics[3] as in our patient.

Acanthosis nigricans was seen in 1 patient. Acantosis nigricans is a marker of peripheral insulin resistance seen in diabetes mellitus. Granuloma annulare was seen in 1 patient. Localised granuloma annulare is more frequently (4%) associated with diabetes. Diabetic dermopathy was seen in one patient. It has been reported that diabetic dermopathy is the most common cutaneous sign in diabetes. It is more common in patients with long history of diabetes as in the present study [12].

Renal Disorders in study as shown, one child of nephrotic syndrome had xerosis and oral candidiasis. Xerosis could be attributed to the hypoprotinemia seen in nephrotic syndrome as a result of protein loss in the urine secondary to renal damage. Oral candidiasis is a complication of therapy of nephrotic syndrome with high dose systemic corticosteroids [12]. The three patients of chronic renal failure had xerosis, pruritus and perforating folliculitis in each patient. Xerosis seen in patients of CRF are due to reduction in the size of eccrine sweat glands, high dose diuretic regimen and may also be due to altered Vit. A metabolism in CRF [19] Pruritus is frequently encountered in patients with chronic end stage renal disease. The incidence varies between 30-40% in various studies [13] Various skin changes seen in patients undergoing hemodialysis were, pruritus in 10(71.4%), xerosis in 4 (28.6%), pigmentation over the face in 4 (28.6%), acquired ichthyosisin 2 (14.3%) and perforating folliculitisin (7.1%) patient. Pruritus was the commonest (71.4%) manifestation. Pruritus in patients undergoing hemodialysis is reported to vary between 34% to 90% by different authors. The etiology is poorly understood, thought to be caused by a combination of several mechanisms, like increased serum levels of histamine, Vit.A and parathyroid hormone, mast cell hyperplasia, peripheral polyneuropathy and xerosis. Xerosis was seen in 4 (28.6%) patients. In one study xerosis was observed in 46% of patients undergoing hemodialysis. Xerosis is due to reduction in the size of eccrine sweat glands, high dose diuretic regimen, and may also be due to altered Vit. A metabolism [14]. Pigmentation over the face was seen in 4 (28.6%) patients. Discoloration of the skin in uremia is attributed to the retention of chromogens and excess melanin due to failure of kidneys to excrete MSH. Incidence varies between 35% and 70% [14].

Acquired ichthyosis was seen in 2 (14.3%) patients. It has been known to occur in patients undergoing hemodialysis.[14] Perforating folliculitis was seen in 1 patient. It can occur in upto 10% patients undergoing haemodialysis [15]. This is more common in patients having diabetic nephropathy. Though the etiology of this process is unclear various mechanisms have been proposed. Dermatological manifestations observed in patients of cirrhosis of liver were pruritus in 5 (55.5%), xerosis in 4 (44.4%), acquired ichthyos is in 1 (11.1%) and nutritional dermatosis in 1 (11.1%) patient. Pruritus seen in patients of cirrhosis is due to the cholestasis.

Nutritional dermatosis seen in one patient was due to the malabsorption associated with chronic alcoholic cirrhosis [16]. Xerosis and acquired ichthyosis seen in patients of cirrhosis of liver probably is an incidental finding as there are no literature documenting this association [16]. Changes noted in patients of cirrhosis of liver with portal hypertension were xerosis in 3 (75%), platynychia, koilonychia, acquired ichthyosis and pruritus in 1 (25%) patient each. All the patients of portal hypertension had ruptured esophageal varices in the present study. The changes like xeorsis, platynychia, koilonychia and acquired ichthyosis are due to the iron deficiency anemia seen secondary to blood loss, hypoprotinemia and malabsorption. Pruritus is due to the cholestasis seen in cirrhosis of liver.

Of the three patients of infective hepatitis, two had xerosis whereas the other had both xerosis and oral candidiasis. Both of these findings are incidental as there are no data available on this association. One patient of fatty liver with distal CBD obstruction presented with generalized pruritus. It has been noted that pruritus is more common in jaundiced patients who suffer from extrahepatic obstruction than in patients with infectious hepatitis [14].

Disorders of thyroid were divided into hypothyroidism, thyrotoxicosis and multinodualr goiter. All the six patients of hypothyroidism had acquired ichthyosis (100%), macroglossia in 2 (33.3%), and lateral madarosis in 1 (16.7%). Acquired ichthyosis is a well-established manifestation of hypothyroidism. It may be the result of a multitude of factors, including diminished epidermal sterol biosynthesis, diminished sebaceous gland secretion, hypohidrosis secondary to eccrine apparatus change [15] Macroglossia is a classic manifestation of hypothyroidism. This is due to deposition of mucopolysaccharides, especially hyaluronic acid and chondroitin sulfate, which are hygroscopic and accumulate water. Lateral madarosis is a characteristic finding in hypothyroidism. Exact cause has not been explained [16]. Moist, smooth skin was present in both the patients of hyperthyroidism and one patient each had pruritus and onycholysis. Moist, smooth, fine skin has been observed in hyperthyroidism. This could be because of the generalized hyperhidrosis. Pruritus is known to occur in hyperthyroidism, affecting 4-10% of patients. It is more common in patients with long standing and untreated hyperthyroidism. This may be the cause of pruritus seen in our patient. Distal onycholysis was seen in one patient. Approximately 5% of patients of hyperthyroidism exhibit soft, rapidly growing nails with distal onycholysis [14]. One patient of multinodular goiter with hyperthyroidism had vitiligo. It has been noted that 7% of patients of

hyperthyroidism were associated with autoimmune diseases like vitiligo [14, 15].

Among the 9 patients of anemia the changes observed were, xerosis in 5(55.6%), platynychia in 3 (33.3%), angular stomatitis in 2 (22.2%), knuckle pigmentation in 2 (22.2%), glossitis, koilonychia and acquired ichthyosis in 1 (11.1%) patient each. Xerosis, platynychia and koilonychia has been observed in severe iron deficiency anemia. Angular stomatitis, glossitis are seen in patients of severe iron deficiency anemia. These are not specific for iron deficiency anemia and may partly be due to associated vitamin deficiencies [13]. Knuckle pigmentation has been observed in patients of megaloblastic anemia due to Vit.B12/folate deficiency [16]. Patients of Vit.B12/folate deficiency can have concurrent iron deficiency thus giving a dimorphic blood picture as seen [17] in our patients. All the five patients of pellagra had pellagroid dermatitis. All the 5 patients were chronic alcoholics, who didn't have bowel or neurological symptoms. Pellagra is known to be more prevalent in chronic alcoholics as a result of both a nutritionally poor diet and malabsorption. The hepatic cells also inefficiently utilizes nicotinic acid [16]. The pellagroid dermatitis is a characteristic and pathognomonic skin change of pellagra. The distribution of the lesions in our patients are typical as described by other authors. It is the earliest sign of pellagra [18]. It is observed that neurological manifestations occur later in the course of pellagra. Thus it can be said that patients of the present study group had not reached the advanced stage of disease as they lacked neurological manifestations. One patient of Vit. A deficiency had Bitot's spots and follicular hyperkeratosis. In Vit. A deficiency, eye findings like Bitot's spots are prominent and often pathognomonic. Follicular hyperkeratosis is also observed in patients of Vit. A deficiency [19]. One child of PEM had nutritional dermatosis and alopecia. Nutritional dermatosis has been documented in patients of protein energy malnutrition. Hair in PEM is thin, grows slowly and falls out easily.

In study 2 patients of acute myeloblastic leukemia presented with dermatological complaints. One patient had diffuse skin infiltrates. Infiltrative plaques with a purple hue producing leonine facies like appearance is seen in lymphocytic and myeloid leukemias as seen in our patient. These lesions occur predominantly over the face and extremities as in our patient. The is chiorectal fossa abscess seen in other case of AML is due to the immune suppression of malignancy which predisposes to an increased frequency of infections. One patient of carcinoma oral cavity had a contiguous metastasis to the cheek. Carcinoma of the oral cavity often extend directly to the skin producing inflammatory changes and sometimes ulcerations. These features explain the changes seen in our patient. Nonspecific skin lesions like acquired ichthyosis pruritus, xerosis often serve as a marker of internal malignancy. Acquired ichthyosis seen in a patient of carcinoma cervix is a nonspecific skin lesion and it is well documented in literature. Pruritus seen in one patient of hepatocellular carcinoma could be because of the associated cholestasis. Xerosis seen in one patient of carcinoma of stomach is a nonspecific finding.

In present study, 2 patients of hyperlipidemia had xanthelasma palpebrum. Xanthelasma palpebrum is the most commonly seen cutaneous xanthoma in patients of hyperlipidemia in our study. This correlates with other studies. One patient of ulcerative colitis had xerosis and platynychia. Since this patient had concurrent anemia, the changes could be attributable to the ane mia. The anemia in this patient was as result of chronic blood loss in stools and malabsorption [20] as a manifestation of his systemic illness. Anemia has been observed in patients of ulcerative colitis.

In present study one patient of chronic obstructive pulmonary disease had pruritus and clubbing. Nail clubbing has been observed in patients of chronic obstructive pulmonary disease. The pruritus seen in our patient may be an incidental finding. One patient who underwent valve replacement surgery had developed keloid at the thoracotomy scar. This is a known complication of surgery. But this finding is not specific to the underlying systemic illness.

Conclusion

Diabetes mellitus, renal and hepatobiliary disorders constituted the majority of cases of systemic disorders presenting with dermatological manifestations. Patients of diabetes mellitus present with a range of dermatological manifestations. Changes like generalized pruritus, xerosis, and dermatophytosis are non-specific. But changes like diabetic bullae, diabetic dermopathy, diabetic scleredema are specific and they signify the long standing nature of diabetes with complications like peripheral neuropathy and microangiopathy respectively. Patients of end stage renal disease present with changes like xerosis, pruritus and pigmentation over the face. Xerosis is due to the atrophy of eccrine apparatus. Pruritus and pigmentation seen may be due to the inability of the kidney to excrete pruritogens and chromogens. Patients of hepatobiliary disorders present with changes like pruritus which may be because of the deposition of bile salts in the skin. Changes like xerosis, koilonychia, angular stomatitis are mainly due to the malabsorption of alcoholic liver cirrhosis. Internal malignancy can present with specific lesions like leukemic metastasis, contiguous spread and with nonspecific skin lesions like pruritus, acquired ichthyosis and xerosis. Nutritional disorders like pellagra are more common in chronic alcoholics due to the nutritionally poor diet and malabsorption. Dermatitis in them is an early manifestation and preceeds the much severe neurological changes. Severe iron deficiency anemia produces changes like xerosis and koilonychia. This signifies the role of nutrition in the normal structure and function of skin and its integuments. When iron deficiency is associated with changes like angular stomatitis, glossitis it signifies the concurrent vitamin deficiency. Hypothyroidism produces changes like acquired ichthyosis, macroglossia and lateral madarosis. Changes like acquired ichthyosis shows the need of hormones for the normal development and keratinization of skin and its integuments. Hyperlipidemic status present with xanthelasma palpebrum, which is the commonest clinical form of xanthomas. Patients can present with complications of systemic disease treatment like keloid at the thoracotomy scar. A middle aged to elderly patient presenting with dermatological manifestation in the absence of primary cutaneous disorder should be investigated for systemic illness.

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