Fungal nail infections among psoriatic patients in Al- Jumhoria Hospital

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Certification

This thesis entitled Fungal nail infections among psoriatic patients in Al- Jumhoria Hospital- Benghazi prepared by Dr. Hanan Kalfa, under supervision of Dr. Abdul Hamed EL Orfi has been approved for submission as partial fulfillment for degree of master of science in Dermatology and venereology.

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Declaration

This is to declare that I have not submitted the work embodied this thesis**" Fungal nail infections among psoriatic patients"** to any other university before.

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I sincerely dedicate this work to:

My brother Mohamed

Acknowledgment

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Summary

1. summary

Introduction: Onychomycosis and psoriasis are common diseases and it is possible that they coexist in the same patients. Many psoriatic patients have nail abnormalities such as pitting, discoloration of nail plate, onycholysis, subungual hyperkeratosis, onychorrhexis and oil drops which are difficultly to distinguish clinically from onychomycosis, and diagnosis relies on mycological examination.

Aim of the study: To determine the rate of fungal nail infections among psoriatic patients.

Patients & methods: This is a cross-sectional study where patients selected from the psoriasis clinic and inpatient in the department of dermatology at Jumhoria hospital in Benghazi- Libya over a period of one year extending from May 2011to April 2012. Eighty six patients of different types of psoriasis of different ages and both sexes were selected for clinical examination using a structured proforma consisting of type of psoriasis, duration of psoriasis, history of joints pain. All were subjected to a detailed medical history and clinical examination including all the nails. Overall 86 psoriatic patients with nail changes were examined for mycological investigations. The severity of skin disease was scored PASI, the patients divided into three groups based on the severity of the disease as mild (PASI <3) moderated (PASI 3-10), and severe (PASI> 10). Nail samples were taken for mycological tests including direct microscopic examination using potassium hydroxide (KOH) 20% and culturing on Sabourauds dextrose agar, and Fungobiotic agar containing cyclohexamide and choramphenicol. Data were analyzed using statistical package for social science (SPSS) computer program version 18. Inferential statistic were used, as chi-square test and considered significant when p value ≤ 0.05 , tables and graphs done by Microsoft office Excel 2007.

Results: Eighty-six psoriatic patients, 53 (61.6%) males and 33 (38.4%) females, male to female ratio was 1.6: 1. The mean age of the patients was 44.9± 13.74 years. The commonest form of psoriasis was psoriasis vulgaris (93%). PASI score ranged from; mild 27 (31.8%) patients, moderate in 35 (41.2%), severe in 23 (27%) of the patients. There was no statistically significant between nail involvement and PASI score. Nail examination revealed that discoloration of nail plate onycholysis, subungual hyperkeratosis and pitting were the commonest change in our patients with psoriasis. There was a statistically significant difference in pitting (P=0.0001) , onycholysis (P= 0.0001), and subungual hyperkeratosis (P=0.047) which was more common in fingernails than toenails. Joint involvement in the form of joint pain (arthralgia) was seen in 25 (29.1%), and swelling and restricted movement (arthritis) in 3 (3.5%). All 86 psoriatic patients underwent mycological examination of their nail. Direct microscopic examination (KOH) was positive in 34 (39.5%) of the patients, and both direct microscopic and culture were positive in 26 (42.6%). The most commonly isolated fungi was non-dermatophyte moulds culture in 32 (52.5%) cases, followed by Candida isolated in 16 (26.2%); and dermatophytes in 5 (8.2%).

Conclusion: Discoloration of nail plate, onycholysis, subungual hyperkeratosis and pitting are the most frequently nail change in psoriasis. Mycolological examination of all psoriasis patients with nail changes is considered obligatory because of the great number of psoriasis patients diagnosed with onychomycosis.

Introduction

2.Introduction

Psoriasis is a common, chronic inflammatory and hyperproliferative disease of the skin (1). It affects approximately 2% of the world population (2). It can develop at any age. Psoriasis is an incurable disease and characterized by unpredictable periods of remission and relapse. It is emotionally disabling disease carrying with it significant psychosocial difficulties which lead to depression and anxiety (3,4) . The prevalence of suicide and depression in patients with psoriasis is higher than other medical conditions and the general population (5). Emotional difficulties resulting in social isolation and sexual problems (4). The most characteristic lesions of psoriasis consist of chronic, sharply demarcated, scaly erythematous plaques particularly on the extensor prominences and the scalp (1). Psoriasis is one of the most frequent dermatoses affecting the nails. Nail involvement is present in about 20-30 % of patients with psoriasis vulgaris and in about 70% of patients suffering from arthropathic psoriasis (6). There is also evidence of isolated nail psoriasis occurrence without skin lesions (7). Many psoriatic patients have nail abnormalities. These are due to psoriasis itself, but may also occur in combination with onychomycosis (8). Nail abnormalities in psoriasis may present as pitting, oil spots, onychorrhexis, subungual hyperkeratosis, yellow or white discoloration, thickening of the nail plates and onycholysis (8). Onychomycosis is a denomination used to describe nail infection usually caused by dermatophytes, yeast, and non-dermatophytic moulds (9). These fungi may cause onychomycosis particularly as secondary invaders after damage by trauma or disease (10).

Clinically nail psoriasis may be confused with onychomycosis, and it is therefore clinically difficult to distinguish between psoriasis and onychomycosis (11). The prevalence of onychomycosis in psoriatic nails has not been accurately assessed,

and the aetiological agents differ among reports (12). The existing few studies have mainly suggested dermatophytes as primary agents; however, reports favoring yeasts also exist (10,13). The result of fungal infections in psoriatic nails are still conflicting (13).

There are no standard therapeutic regimen exists for nail psoriasis as it is resistant to treatment and so difficult to cure . In case of onychomycosis, antifungal therapy for improvement is required. The goal of therapy is the improvement of the functional and psychosocial aspects of psoriatic nail disease (14). The treatment of nail psoriasis is topical steroids , vitamin D analogs, 5% fluorouracil in propylene glycol and 20% urea (15). Systemic therapy is seldom given for nail psoriasis alone but may be needed where there is a significant loss of function, often associated with pain (15) .

To the best of our knowledge, there are no reports of prevalence of fungal nail infections among psoriatic patients in Benghazi .

Literature review

3.Literature review

The word psoriasis derives from a Greek term psora which means itching. The Greek physician Galen of pergamon (130-200 BC) uses the term psoriasis vulgaris to refer to all dermo and epidermopathies accompanied by pruritus (16). It was just in 18th (eighteen century) when the English dermatologist Robert William (1757-1812) included psoriasis in erythematous squamous diseases (17).

Psoriasis is chronic, incurable, non-infectious inflammatory skin disease(18). It is an immune mediated genetically determined common dermatological disorders which affects skin, nails , joints and has various systemic associations (19). The most characteristic lesions consisting of sharply demarcated dull-red, scaly plaques, particularly on the extensor prominences and in the scalp (20). Psoriasis is associated with high impact on health-related quality of life and considerable economic cost (19).

3.1 Epidemiology

Prevalence of psoriasis varies from country to country and ethnic groups. The reason for the geographic variation in prevalence is unknown. Low prevalence rates have been reported among Japanese, Eskimos, Australia, west Africa and South American Indians (21-24). Caucasians are more frequently affected than other ethnic groups (25). It is estimated that the prevalence of psoriasis ranges from 0.5% to 4.6% worldwide (21-24).The prevalence in Europe cited between 1% and 2% of the population whereas in USA it is estimated to be 0.6% to 4.6% (21). Psoriasis is equally common in males and females and it is onset may be at any age (26). Based on age of onset and HLA association, there are two types of psoriasis (27). Patients who develop psoriasis before the age of 40 years (type I) are much more likely to have affected first-degree relatives, HLA-CW6 associated, and to experience severe and recurrent disease than patients who develop the disease after the age of 40 years (type II) (27).

3.2 Clinical features

Psoriasis vulgaris (chronic plaque psoriasis) is the most common form of psoriasis, accounting for around 90% of presentations (26). The classic lesions of psoriasis is a well demarcated, raised, red papules and plaques covered with white scaly surface(28). It commonly affects the extensor (elbows and knees) and others areas involved include the scalp, nails, genitalia, and they may be the only presentation of the disease (26).

3.3 Clinical varieties

3.3.1 Guttate psoriasis

Guttate psoriasis (from the latin gutta meaning droplet) is common in children or young adult with family history of psoriasis and follows streptococcal infection (29).It is characteristic by the acute onset of round, erythematous, slightly scaling papules over the trunk and extremities (30). It is self-limiting, resolving within 3-4 months of onset, and the risk of developing chronic form of psoriasis after a first episode of guttate psoriasis has been estimated at 40% (29). Chronic plaque psoriasis and guttate psoriasis seem to be genetically similar condition with a strong association to the PSORSI genetic locus (31).

3.3.2 Inverse psoriasis

Inverse psoriasis is well-defined thin plaques with minimal scales. It has the classical shiny appearance and is found in the major skin fold, such as the axillae, submammary regions, groins, and natal cleft (30).

3.3.3 Sebopsoriasis

Sebopsoriasis has similar morphology and anatomical distribution to seborroeic dermatitis; nasolabial folds, nose, ears eye brows, hair line, scalp, presternal and interscaplar lesions and the two disease are sometimes difficult to distinguish (30).

3.3.4 Scalp psoriasis

Often, very thick plaques develop, especially at the occiput. The whole scalp may be diffusely involved, or multiple discrete plaques of varying size may be seen (32). A morphological entity consisting of plaques of asbestos-like scaling, firmly adherent to the scalp and associated hair, has been termed pityriasis amiantacea (33). Scalp psoriasis is commonest in children and young adults, and is best regarded as nonspecific reaction pattern, which may be seen in other scaling scalp conditions. Hair loss, sometimes cicatricial, is seen in pityriasis amiantace, Otherwise, common scalp psoriasis is not a frequent cause of alopecia, although it may occur (34).

3.3.5 Hands and feet

The palms and soles may be the only sites involved in the manifestation of the disease. They may be present as typical silvery scaly patches, thick fissured plaques resembling hyperkeratotic eczema or as palmoplantar pustulosis (20).

3.3.6 Napkin psoriasis

Napkin psoriasis usually begins between the age of 3 and 6 months and appears in diaper areas (26). Diaper dermatitis, caused by irritative effects of urine in wet diaper area, may imitate a psorisiform eruption (35). A diagnosis of true psoriasis must be extremely guarded unless typical psoriatic lesions are present in other sites of predilection of psoriasis (26).

3.3.7 Erythrodermic psoriasis

When confluent psoriasis involves more than 90% of the skin surface, it is known as erythroderma (36). Erythrodermic psoriasis can be life threatening. Among these patients, characteristic scaling is usually absent. There is significant heat loss, dehydration and metabolic disturbance caused by increased cutaneous blood flow (37). Extravasation of proteins into the tissue due to vasodilation may cause edema of the limbs in patients with long-standing erythroderma. Fatigue, mylagia, shortness of breath, fever, and chills may

also occur (20, 37). Two forms exist (20); in the first form, chronic plaque psoriasis may worsen to involve most or all the skin surface, and the patients remain relatively responsive to therapy (26) and the second form is a part of the spectrum of unstable psoriasis (20). It may occur at any time, either presenting suddenly and unexpectedly or result from non-tolerated external treatment like UVB, anthralin and tar (20,26). Generalized pustular psoriasis may revert to erythrodermic psoriasis with diminished or absent pustule formation (37).

3.3.8 Pustular psoriasis

Pustular psoriasis can be either localized or generalized.

3.3.8.1 Generalized pustular psoriasis

Patients with generalized pustular psoriasis may have preexisting plaque psoriasis or develop it after pustular episodes. Acute episode may be triggered in patients with plaque psoriasis by irritating topical therapy or abrupt corticosteroid withdrawal (38). At the onset of an attack of acute generalized pustular psoriasis (von Zumbusch type), the skin become very red and tender with formation of lakes of pus periungually, on the palms, and at edge of psoriatic plaques. The pustules dry out and the skin peels off, leaving a glazed, smooth erythematous surface on which new crops of pustules may appears . There may be fever and symptoms such as anorexia, nausea and a fetid odor develops (36,38,39). Oral lesions may be present with pustules or acute geographic tongue (35). Generalized pustular psoriasis may be associated with polyarthritis and cholestasis from neutrophilic cholangitis (39). Generalized pustular psoriasis may appear during pregnancy, being called impetigo herpetiformis (40). Onset is usually before the sixth month. The characteristic features are pustules on the ring like erythem. It tends to develop earlier in subsequent pregnancies. Impetigo herpetiformis is often associated with hypocalcaemia. There is usually no personal or family history of psoriasis (38,41). Generalized pustular psoriasis

should be distinguished from acute generalized exanthematic pustulosis, a self-limiting febrile drug reaction usually resolving in two weeks after withdrawal of suspected agents, characteristic by pinpoint nonfollicular pustules on erythematous patches mainly involving folds. Single necrotic cells in the epidermis, eosinophils and vasculitis changes in the dermis are peculiar pathologic features (41,42).

3.3.8.2 Localized pustular psoriasis

Two main clinical varieties are reported as localized pustular psoriasis: acrodermatitis continua of Hallopeau and palmoplantar pustulosis (37).

3.3.8.2.1 Acrodermatitis continua of Hallopeau

Acrodermatitis cotinua of Hallopeau, is a rare, chronic, sterile pustular eruption of fingers and toes (35). Often, it begins after a localized trauma starting at the tip of a single digit (43). The pustules may coalesce to form lakes of pus, and over time, they may spread proximally to involve the dorsal aspects of the hands, forearms, and feet (26). Pustulation of the nail bed and nail matrix often is associated with onychodystrophy and even anonychia of involved digits (20). Bony changes can occur with osteolysis of the distal phalanx that underlies the eruption. The condition may evolve into generalized pustular psoriasis (43).

3.3.8.2.2 Palmoplantar pustulosis

Palmoplantar pustulosis is more common in women (more than 70% of patients are women) and is much more strongly associated with smoking than plaque psoriasis (44). Clinically, the disease presents with erythematous and scaly plaques studded with sterile pustules persist on the palms and soles (26). No progression to generalized pustular psoriasis has been described. Recently, it has been documented that palmoplantar pustulosis does not share with plaque psoriasis the association with the PSORSI locus (31).

3.3.9 Psoriatic arthritis

Psoriatic arthritis, as originally defined by Moll and Wright (45), is a seronegative inflammatory arthritis that occurs in the presence of psoriasis. Five types of psoriatic arthritis have been proposed: distal interphalangeal arthritis; peripheral asymmetrical mono/oligoarthritis which is the most common form. Moreover, Symmetrical rheumatoid-like polyarthritis; spondylitis; arthritis mutilans and axial arthritis are other forms seen. The deformities that result from psoriatic arthritis lead to shortening of digits because of severe joint or bone lysis, with the most severe form being the telescoping of digits and bone fusion of joints may also occur. These changes seen in the radiographs as the classic pencil in cup and ankylosis, respectively (20, 26,35). HLA-B27, -B37, -B17 and –A3 are more frequent in psoriatic arthritis (20). Peak age of onset is the fourth decade and there is well recognized juvenile form also, with age of onset between 9-12 years (46). Typically, early onset psoriatic arthritis occurs in setting of a strong family history of the disease (26). Both psoriasis and psoriatic arthritis affected men and women equally (47). Nail matrix disease is more strongly associated with psoriatic arthritis than with psoriasis alone, being found in 80%-85% of those with arthritis versus 20%-30% of those with the isolated cutaneous form of the disease (26). Extra- articular manifestaions of psoriatic arthritis are associated with periosteal reaction, enthesitis, and spinal involvement however, atypical clinical features of psoriatic arthritis is dactylitis, inflammation of an entire digit. Magnetic resonance imaging (MRI) scan have demonstrated that both tenosynovitis and synovitis contribute to the clinical picture of dactylitis (46). Psoriatic arthritis is classified with the spondyloarthropathies because of the presence of spondylitis in up to 40% of patients, the occurrence of extra- articular features which is common to the spondyloarthropathies such as mucous membrane lesions, irtis, urethritis, diarrhoea, aortic root dilatation, and the association with HLA-27(48). psoriatic arthritis may be distinguished from the other

spondyloarthropathies by the presence of peripheral arthritis , asymmetrical distribution of the spinal involvement and lower level of pain, and limitation of movement (49).

3.3.10 Nail psoriasis

Nail changes are frequent in psoriasis, being found in up to 50% of fingernails and 35% of toenails (50). Nail involvement ranges from minor alteration in the nail plate to severe defects, up to loss of the nail plate in pustular forms of psoriasis (26). Proximal nail plate fold, nail matrix, nail bed, and hyponychium can all be involved, leading to different clinical aspects (20), such as pitting, yellowish discoloration and paronychia, to subungual hyperkeratosis, onycholysis and severe onychodystrophy (51).

3.3.10.1 Function of the nails

The main function of the nail apparatus is to produce a strong, relatively inflexible, keratinous nail plate over the dorsal surface of the end of each distal digit of the hands and feet (20). The nail plate acts as a protective covering for the fingertips (52). In addition to shielding the fingertips from traumatic injury ,moreover, the nail plate also applied a pressure that opposes the volar side of the terminal phalanx, which contributes to the enhanced sensory discriminatory ability to the fingertips (52). Furthermore, Nails also have more obvious application as they are instrumental part of scratching and grooming, can utilized as a means of defense or attack, are often modified or decorated to become a cosmetic accessory, and occasionally are capable conveying information about an individuals social standing (53).

3.3.10.2 Nail embryology

The human nail apparatus start to develop in the 9^{th} week of gestation and is completed by the 20^{th} of intrauterine life (54). At this early stage, an invagination of the primitive epidermis forms an uninterrupted groove that delineated a flattened surface at end of each digit, known as the nail field (55). At 10 weeks the nail field become visible, a

rectangular area overlying the dorsal tip of the terminal digit, the area in which the entire nail apparatus will develop. The nail field is delineated by a continuous shallow proximal, lateral and distal groove (54). The proximal nail field displays the beginnings of a structure known as the matrix primordium (55). It is represented as a group of cells arising from the proximal groove of the nail field that grows in a proximal direction into the digit. The matrix primordium will eventually develop into two structures: the most dorsal cells will contribute to the epithelium of the proximal nail fold, whereas the most ventral region of the primordium will mature into the distal and intermediate matrix epithelium. The distal nail field undergoes changes as well. On the dorsum of the distal tip of each digit, a visible mound of cells emerges, known as distal ridge (55). The area between distal ridge, lateral nail folds and the matrix will become the nail bed which begins to keratinize from the distal ridge and at 14 weeks the whole nail bed has developed a granular layer. The nail plate, an accumulation of flattened keratinocytes, emerges from the nail matrix beneath the proximal nail fold and grow distally, furthermore the granular layer of the nail bed gradually disappears and keratinocytes of the nail bed are integrated into the underside of the nail plate. At 17 weeks the nail plate covers most of the nail bed and at 22 weeks it grows over the distal ridge, which called the hyponychium (55).

3.3.10.3 Anatomy of the nail

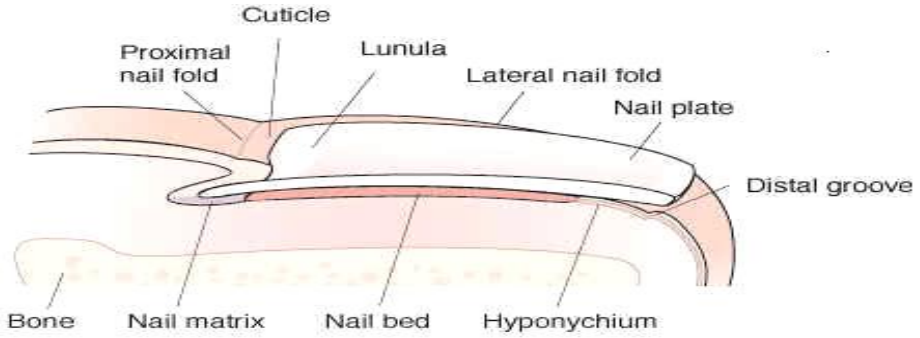

Fig. (1) Anatomy of the nail

The nail apparatus consists of the nail plate with lunula, nail matrix, nail bed, the lateral and proximal nail folds with the cuticle and hyponychium (54).

3.3.10.3.1 Nail matrix

Nail matrix produce the major part of the nail plate. It can be divided into three regions; the dorsal section the matrix contributes to the most superficial layers of the nail plate whereas the intermediated region of matrix forms the deeper layers and The ventral subdivision which is the most distal part of the nail matrix contributed by the nail bed (56).

3.3.10.3.2 Nail bed

The nail bed is the area underneath the nail plate that is between the lunula and the hyponychium. It is generally regarded that the nail bed dose play a role in forming the deeper layers of the nail plate, as it is thin epidermal layer represents the ventral portion of the matrix (56).

3.3.10.3.3 Nail plate

The nail plate is a keratinized structure which is continuously growing throughout life (57). It is a rectangular, translucent, transparent. Nail plate is curved in both the longitudinal and transverse axes, especially in the toes (57). Nail plate arises from beneath the proximal nail folds and is bordered on both sides by the lateral nail folds (58). Often within the proximal aspect of the nail plate, most notably on the thumbs, are the visible half moon shaped area called lunula that is the visible portion of the nail matrix (58) Because of the enhanced vasculature of underlying nail bed, the dorsal surface of the nail unit is visibly pink in color (58).

3.3.10.3.4 Nail folds

The proximal nail fold overlies the proximal part of the nail matrix and continuous with the horny cuticle. The cuticle is important anatomic barrier that protects the space

between the proximal nail fold and the nail bed (57). The lateral nail folds are extensions of the skin surface of the sides of the digits and join the nail bed medially (52).

3.3.10.3.5 Hyponychium

The hyponychium marks the anatomic area between the nail bed and distal groove, where the nail plate detaches from the dorsal digit (59). There is a portion of the hyponychium, known as the onychodermal band, that reflects on to the ventral surface of nail plate. This band acts to protect the nail parenchyma from the outside environment by providing a barrier to chemical agents and infectious organisms (59).

3.3.11 Microanatomy of the nail

3.3.11.1 Nail matrix

Nail matrix keratinocytes divided in the basal cell layer and keratinize in the absence of a granular layer, thereby not requiring keratohyalin formation (54). This is one of the major distinguish histologic features between the matrix and the proximal and lateral nail folds, both of which possess a granular layer (57). The nail matrix contains melanocytes in the lowest three cell layers and these denote pigment to the kerationcytes (58). The appearance of melanocytes separate from the basement membrane distinguishes them from those found in the nail folds, which are primarily basal, and manifest as longitudinal bands across nail plate. These are often easily detected in darker-skinned individuals (52,54).

3.3.11.2 Nail bed

Nail bed consist of an epidermal part (ventral matrix) with underlying connective tissue closely apposed to the periosteum of the distal phalanx. There is no subcutaneous fat in the nail bed, although scattered dermal fat cells may be visible microscopically (58). Nail bed keratinnization produces a thin horny layer that forms the ventral plate (57). The epidermis of nail bed contains parallel longitudinal ridges, stretching from the lanula to the

hyponychium (54). These ridges interlock with corresponding dermal rete ridges at dermo-epidermal junction, strongly binding the nail bed to the nail plate. The blood vessels that run along these ridges are responsible for the splinter hamorrhages associates with trauma or disease processes, such as endocarditic (52,54).The nail bed dermal collagen is mainly orientated vertically, being directly attached to the phalangeal periosteum and the epidermal basal lamina (58). The connective tissue network contains important physiological structures, including specific blood vessels supplying the nail unit, as well as division of the lymphatic system (58).

3.3.11.2 Nail plate

The nail plate comprises three horizontal layers: a thin dorsal lamina, the thicker intermediate lamina and a ventral layer from the nail bed (58). It is composed of granular, flattened squamous cells that are arranged in tightly packed sheets (lamellae) in which the cells are closely adhered to each others (52). The nail plate contains significant amounts of phospholipid, mainly in the dorsal and intermediate layers, which contribute to its flexibility (58). The nail plate is rich in calcium, found as phosphate in hydroxyapatite crystals (58). Although calcium does provide some strength to the nail plate, it is the sulphur protein within the nail matrix that is primarily responsible for plates firmness and relatively inflexible quality (56). Other constituents of the nail include iron, zinc, manganese, and cooper, but their significance to the nail plate is unknown (56).

3.3.11.3 Nail folds

The proximal nail folds are similar in structure to the adjacent skin but are normally devoid of dermatoglyphic markings and pilosebaceous glands (58). From the distal area of the proximal nail folds the cuticle adheres to the upper surface of the nail plate, it is composed of modified stratum corneum and serves to protect the structures at the base of

the nail, particularly the germinal matrix, from environmental insults such as irritants, allergens and bacterial and fungal pathogens (58).

3.4 Pathogenesis

Until the early 1980s, psoriasis was believed to be a disease primarily of epidermal keratinocytes proliferation, and the cutaneous inflammatory infiltrate to be a secondary event (60). However, strong evidence now exists that the cell mediated adaptive immune response is crucial in psoriasis. The leucocyte infiltrate in psoriasis consists predominantly of CD4-positive and CD-8 positive T-cells, and may, precede epidermal hyperplasia (61). Some adhesion molecules which promote leucocyte adherence are highly express in psoriatic skin such as intercellular adhesion molecule-1 which is expressed on epidermal keratinocytes and along with E-selectin on dermal capillaries (62). Cytokines of the TH1 pathway including interferone gamma, interleukin2, and interleukin12 are predominate in the plaques. Psoriasis is classified as a TH1 disease (63), which is consistent with the relative under-representation of TH2 diseases, such as atopic dermatitis, in patients with psoriasis (64). T-cell-targeted immunosuppressant such as ciclosporin are efficacious in treatment of psoriasis (65), and denileukin diftitox, an interleukin-diphtheria fusion toxin which is cytolytic for activated T cells (66). Moreover, bone marrow transplantation can appear to transmit or clear psoriasis (67). T cells in the cutaneous infiltrate are predominantly of the memory effector CD45 RO+ designation which are positive for cutaneous lymphocyte- associated antigen, a marker for skin-homing leucocytes (68). There is evidence that these cells form clones in the epidermis of psoriatic plaques (68). However, no definitive autoantigen or immunogen has yet been identified to which the inflammatory response is directed. Natural killer cells and natural killer T cells are part of the cutaneous inflammation in psoriasis (69); at times, neutrophils form a large proportion of leucocytic infiltrate , particularly in generalized pustular psoriasis (69). Recent studies

have considered the role of dendritic cells and endogenous antimicrobial peptides. Three types of dendritic cells appear likely to involved in the development of psoriasis: Langerhans cells in the epidermis; dermal factor XIIa-positive dendritic cells; and a subset of dendritic cells, know as plasmacytoid dendritic cells, which are found in involved psoriatic skin but not in normal skin. Langerhans cells are the outermost sentinels of immune system: they recognize and capture antigen, and migrate to local draining lymph nodes, where they present them to T cells (70) . The migration of epidermal langerhans cells in response to cytokine and allergic stimuli is impaired in patients with early-onset psoriasis, implying that these cells may be acting in a regulatory manner to maintain cutaneous immune homoeostasis (71). Plasmacytoid dendritic are distinct from dermal factor XIIIa-positive dendritic cells and langerhans cells in that they express CD123 and HLA-DR, but lack CD11c (72). After activation via surface TOLL-like receptors, plasmacytoid dendritic cells produce interferon α which lead to the formation of plaques in predisposed individuals by driving Th1 responses, forming a further link between the innate and adaptive arms of immune response (71). Endogenous antimicrobial peptides, cathelicidins and β defensins are overexpressed in psoriatic skin, by contrast with atopic dermatitis, in which such peptides are underexpressed (73). This observation is congruent with the clinical observation that psoriatic skin is rarely secondarily infected, whereas in atopic dermatitis secondary infection is a substantial problem. The activity of TNFα, a key pro-inflammatory cytokine of innate immune response, is substantially increased in psoriasis. However the central role of this cytokine in psoriasis is came to light through observation of the efficacy of anti-TNF biological therapies for the disease (74,75).

3.5 Histological features

Psoriasis has three principal histological features: epidermal hyperplasia; dilated, tortuous blood vessels in the dermis; and an inflammatory infiltrate of leucocytes,

predominantly into the dermis. Histology of uninvolved, clinically symptomless areas of skin is normal (20). The hyperplastic epidermal changes are associated with an underexpression of markers of keratinocyte differentiation, including keratins K1 and K10; loss of the granular cell layer; parakeratosis (retention of nuclei in cells of the stratum corneum); elongation of rete ridges; and presence of micropustules of kogoj and microabscesses of munor. Keratinocytes of the hair follicle are unaffected (20). Of the three main histological features of psoriasis, increased vascularity in the dermis is probably the most overlooked. Angiogenic factors produced by epidermal keratinocyts; are recognized as drivers of abnormal dermal vascular proliferation and angiogenesis. Levels of one such factor is vascular endothelial growth factor (VEGF), also known permeability factor, there are significantly raised in plaque psoriasis (76); its serum concentration correlates with the clinical severity of the disease (76).

3.6 Psoriasis of the nail and related pathophysiology

Psoriasis is associated with nail changes in significant proportion of cases, and the frequency is much higher in psoriatic arthropathy (20). While most of the nail changes occurring in psoriasis are due to the psoriatic process involving the nail unit, other factors may play a considerable role in the induction or worsening of psoriatic nail disease (20). Onychomycosis, an infection of nail unit by yeast , dermatophytic as well as non-dermatophytic fungi, have been found to be associated with psoriatic nail changes in several studies (78,79,12,8). Psoriatic nail disease may be a predisposing condition for secondary invasion by fungi. Many psoriatic patients have nail changes which are morphologically resemble onychomycosis, and in such patients further differential diagnostic procedures are essential to exclude the presence of coexisting fungal infection. Onychomycosis playing a role in the initiation or the worsening of nail changes in psoriatic patients is also possible but it is more difficult to substantiate (79,80).

3.6.1 Pitting

Pits are superficial depression within the nail plate that vary in morphology and distribution. A pit indicated a defect in the uppermost layers of the nail plate, which arise from the proximal matrix (81). Psoriatic lesions within the nail matrix primarily consist of clusters of parakeratotic cells in stratum corneum that disrupt the process of normal keratinization (57). Furthermore, deeper depression would be indicative of intermediate and ventral matrix involvemen. The amount of time in which the matrix is free of any psoriatic lesion directly corresponds to the length of normal nail plate growth observed (57). There are instances in which psoriatic lesions only affect the intermediate and ventral matrices, as opposed to the dorsal matrix. In these situations, the nail would have a more leukonychic (whitish) appearance, because of the internal desquamation of parakeratotic cells, as opposed to the materialization of pits externally (52). Although pits can be seen in normal individuals, they can also appear in other diseases, such as chronic eczema, alopecia areata, and lichen planus, however pitting are typically deeper in people with nail psoriasis (57).

3.6.2 Discoloration and onycholysis

Discoloration in psoriasis is multifactorial. The major factors are nail thickening and subungual hyperkeratosis (58). Both of these contribute to yellow appearance particularly common in the toes (58). The coincidence of onychomycosis and psoriasis is also seen in the toenails and can add to pathological appearance (57). Candida species and pseudomonas infection can result in green discoloration. While non-dermatophytes and bacteria infections are common, dermatophytes are rare (82). Oil spot and salman patches are translucent, yellow-red discolorations observed beneath the nail plate extending distally toward the hyponychium, due to the psorisiform hyperplasia, parakeratosis, microvascular changes, and trapping of neutrophils in the nail bed (57). Onycholysis is the distal and /

or lateral separation of the nail from the nail bed (6,7). Psoriatic onycholysis can be considered the reference point for other forms of onycholysis where it is typically distal, with variable lateral involvement. Areas of separation appear white or yellow due to air beneath the nail and sequestered debris, shed squames and glycoprotein exudate. There are many other causes of secondary onycholysis, which is one of the commonest nail signs such as fungal infections, psoriasis, dermatitis and trauma (57,58).

3.6.3 Subungual hyperkeratosis

Subungual hyperkeratosis result from the deposition and collection of cells under the nail plate that have not undergone desquamation (58); also due to inflammatory disorders that cause an abnormal keratinization of distal nail bed and hyponychium (57). Nail plate changes are variable, but thickening is common. Dry, white or yellow hyperkeratosis may crumble away from the overhanging nail. Features of onychomycosis, wart infection, psoriasis, trauma, and atopic dermatitis may found elsewhere to determine the aetiology (58).

3.6.4 Nail thickening

Common causes of nail thickening are psoriasis, eczema, trauma and onychomycosis, some of which may be associated with subungual hyperkeratosis (58).

3.6.5 Other nail abnormalities

Depending on extent to which different parts of the nail matrix are affected by psoriasis. There is a wide range of clinical signs that can subsequently manifest within the nail plate (83). Lesions of the matrix of short duration, which are often caused by intermittent inflammation of proximal nail folds, will lead to grooves and ridges within the nail plate, commonly known as Beau‘s line (83). Conversely, in longer-time pathology, a condition known as onychorrhexis may occur. This condition, represented by longitudinal ridging and splitting of the nail, is caused by corresponding longitudinal psoriatic lesions

within the nail matrix (52). Leukonychia results from defective keratiniztion of the distal matrix where the superficial nail plate is structurally normal, but the nail presents opaque white patches or striae (58). Chronic paronychia is one of the commonest specific nail complaints met within dermatological practice and it ranks in importance with fungal nail infections and psoriasis as a cause of nail disease (57). A complete loss of the nail plate due to proximal separation extending distally is called onychomadesis (58). Splinter hemorrhages appear as red to black small thin longitudinal lines under the nail bed ,can be by trauma, psoriasis, vasculitis and bacterial endocarditis (57)

3.7 Treatment

PASI (Psoriasis Area and Severity Index) score is the most widely used index measure of psoriasis severity, evaluating the area, erythema, scaliness and thickness (84) (Appendix I). In particular improvements in PASI of about 50%, 75%, 90% in comparison to baseline are regarded as markers of effective treatment (85). Although there have been many recent advances in the treatment of skin psoriasis, the options for nail psoriasis are far more limited in scope and efficacy (84). The management of nail psoriasis can be divided into the following: topical, intralesional, phototherapy, and systemic therapies.

3.7.1 Topical therapy

High-potency corticosteroid products are the mainstay of treating nail psoriasis. They quickly reduce inflammation and induced regression of lesions. It have both direct and indirect effects on the skin (86). By diffusing through the cells and binding to corticosteroid receptors located within the cellular cytoplasm, they are able to penetrate the nuclear envelope and interact with cellular DNA (87), ultimately regulating the transcription of specific genes (87). As result, they have an anti-inflammatory effect that influences virtually every aspect of cutaneous inflammation, including decrease in vascular permeability leukocyte penetration to the skin (88), and specific cytokines and proteins,

essential for an effective immune response. Indirect effects of corticosteroids stem from their antiproliferative activity, resulting in decreased cellular division amongst keratinocytes (88). This is in addition to atrophogenic effects seen in the dermis which is primarily caused by the inhibition of fibroblast number and function, eventually leading to decreased deposition of collagen and elastin within the skin (89).

Topical vitamin D analogues such as calcipotriol and calcitriol act by regulate skin cell production and development, inhibit epidermal proliferation, promote keratinocytes differentiation and have immunosuppressive effects on lymphoid cells (90). The active metabolite of the vitamin D3 is 1α, 25-dihydroxyvitamin D3 (calcitriol) and two synthetic analogues, calcipotriol and 1α,24-dihydroxyvitamin D3 (91,92). Currently, no standard therapeutic regimens exist for the use of topical steroids or vitamin D3 analogues regarding psoriatic nail treatment. However, in clinical practice, physicians frequently prescribe the application of high potency steroids for nail psoriasis, and often recommend that lesions be covered by an occlusive dressing, such as a pair of plastic gloves (91). In case of nail matrix psoriasis such as pitting and ridging, clinical experience suggests that when these common lesions occur together with nail fold inflammation, they may clear by treating the nail folds alone (92). Twice-daily application of calcipotriol ointment has been reported as twice-daily betamethasone diproprionate in reducing subungual hyperkeratosis after 3 to 9 months in 58 patients with nail bed psoriasis (93). Other topical agents, 1% 5-fluorouracil in propylene glycol or 20% urea cream have been used where pitting and nail thickening are the main problems (94). It has also been used in acrodermatitis continua of Hallopeau with good results (95). Cyclosporine is difficult to incorporate into a topical formulation, but some success has been reported with a 10% oily preparation used over several months (96). The product has been demonstrated as unstable, which in some instances may be the basis of a poor result (96). Anthralin is an antipsoriatic agent that is derived from

chyrasobin, a substance of Brazilian tree Andira araroba (97). It shows to decrease inflammation, increase cellular differentiation and decrease cellular proliferation in psoriasis. After 5 months from topical application of anthralin ointment 0.4-2% to the nail bed for 30 minutes before washing, moderated improvement was recorded in 60% of patients regarding paronychia, pitting and onycholysis (97).

3.7.2 Intralesional injections

It consists of injecting small doses of corticosteroid into or near the structure of the nail unit that is responsible for the specific nail dystrophy. Suspension of 2.5 mg/ml of triamcinolone acetonide into the proximal nail folds may be administered every 4-6 weeks for 5-6 months and can be very helpful for nail matrix psoriasis like pitting and leuchonychia. The procedure should be a preliminary digital anesthetic block (98). Although many studies did not mention what size of needle was used, the injection is usually given with a 30-gauge needle. Possible side effects are nail atrophy and subungual hemorrhage (98).

3.7.3 Phototherapy

While phototherapy is the mainstay of the treatment of psoriasis skin lesions, the evidence for it's used in nail psoriasis is very limited. Small numbers of patients have benefited from psoralen plus UVA (PUVA), with improvements in nail bed lesions (99).

3.7.4 Systemic therapy

Systemic treatment may be used in patients with nail psoriasis when topical, intralesional or phototherapy has failed. The effect of systemic therapy with cyclosporine and etretinate on nails has been investigated in 210 patients with psoriasis, of whom two-thirds had nail involvement (100). This study reported that cyclosporine and etretinate improved nail signs after 10 weeks, but the improvement was not statistically significant.

Acitretin is now used clinically instead of etretinate. There has been a single report of psoriatic nail improvement for a patient treated with fumaric acid esters after a poor response to topical therapy, PUVA and cyclosporine (101).

3.7.5 Biological therapy

There are few studies on biological therapy for nail psoriasis, many studies are in with nail psoriasis (33). Infliximab, a chimeric monoclonal antibody that binds TNFα and is administered intravenously, has shown extremely beneficial results in treatment of nail psoriasis (102). Also , vey good results were seen in patients on adalimumab, as well as etanercept with regards to their nail psoriasis (103).

3.8 Antifungal therapy

Treatment of onychomycosis depends both on the severity of nail involvement and on the causative fungus (104). It is divided into topical and oral therapy. Topical treatment alone are generally unable to cure onychomycosis because of insufficient nail penetration. Ciclopirox 8% lacquer, it has efficacy against Candida species and some molds and applied daily for 48 weeks (105). Amorolfine solution has activity against the yeast, dermatophytes and moulds and has shown efficacy when applied once weekly (106). Both have been reported to have good penetration through all nail layers but low efficacy when used as monotherapy (105,106). They may be useful as adjuctive therapy in combination with oral therapy. Terbinafin is a fungicidal agent against dermatophytes, Aspergillus, and Scopulariopsis, but demonstrates variable activity against Candida sp. A course of 250mg daily for 6 weeks is effective for finger nail infections while 12-week for toenail infections (104). It is important to remember that oral terbinafine may induce de novo development of psoriasis lesions or exacerbate preexisting psoriasis (107). Itraconazole is fungistatic against dermatophytes, non-dermatopyte moulds, and yeast. Pulsing dosing 400 mg daily for one week per month for two months in fingernail infections and at least 3 months for

toenail infections (104). Fluconazole is fungistatic against dermatophytes, some moulds and Candida. The usual dosage is 150 to 300 mg once per week for 3-12 months (104). Griseofulvin is no longer considered standard treatment for onychomycosis because of it is prolonged treatment course, and low cure rates (104). Recently , there has been an increased interest in phototherapy technologies for the local treatment of bacterial and fungal infection (108). However, light- based devices including laser have shown promise as treatment modalities (108).

Aim of study

4. Aim of the study

1. To determine the rate of fungal nail infections among psoriatic patients.

2. Isolation and identification of causative agents of fungal nail infections among psoriatic patients.

3. To assess the relation between severity of psoriasis and nail involvement.

Patients & Methods

5. Patients and Methods

5.1 Patients

This cross-sectional study where patients selected from the psoriasis clinic (once weekly) and inpatients in the department of dermatology at Jumhoria hospital in Benghazi- Libya over a period of one year (May 2011-April 2012). Eighty six patients of different types of psoriasis of different ages and both sexes were selected for clinical examination using a structured proforma consisting of type of psoriasis, duration of psoriasis, history of joints pain. All were subjected to a detailed medical history and clinical examination including all the nails. Overall 86 psoriatic patients with nail changes were examined for mycological investigations. Those patients who were on systemic antifungal in past 3 months or topical antifungal agents in past month, systemic therapy of psoriasis and patients had systemic disease as diabetes mellitus were excluded from the study. The severity of skin disease was scored according to the Psoriasis Area Severity Index (PASI, Appendix I). Psoriasis was graded according to PASI, the patients divided into three groups based on the severity of the disease as mild (PASI<3), moderated (PASI 3-10), and sever (PASI>10) (Ramshi et al. (109)).

A structured proforma for history, clinical, and laboratory investigation, were recorded (Appendix II, III).

Methods

The specimens were obtained from clinically abnormal nails, by a scarping the nail bed, the under side of the nail plate and the hyponychium, after cleaning the affected areas with 70% alcohol. For each patient, a separate scalpel blade and a sterile nail clipper were used for collection of the material to be examined. Every collected specimen was divided into two parts for the following:

1. Direct microscopic examination by mounting Potassium hydroxide (20% solution) to determine the presence of fungal elements.

2. Cultivation on sabourauds dextrose agar (SAD), and Fungobiotic agar which is containing the cycloheximide and chloramphenicol to inhibit the growth of molds and bacteria respectively.

5.2.1 Potassium hydroxide (KOH) mounts

The collected specimen was placed in a glass tube and drops of KOH (20% solution) were added using eye dropper to the glass tube and kept for 24 hours to dissolve the keratin. The collected specimen is then placed on glass slide, and cover is put on top. The preparation is scanned with the high power lens (40X) under reduce light for selection of the filed to examine in more details under higher magnification. Repeated KOH examination were performed before the specimen was considered as negative for direct microscopic mount.

5.2.2 Preparation of the medium

The steps used for preparation of the medium were as the following: (Appendix IV)

(a) Non-selective medium

(1) Sabouraud`s dextrose agar was used Oxiod dehydrated medium formula (CM 0041).

(2) A 65g from sabouraud`s dextrose agar was dissolved in 1000 ml of distilled water, mixed medium gently by rotating the flask, and autoclaved at 115°C for 10 minutes.

(b) Selective media

(1) Fungobiotic agar (Mycobio agar) was used Himedia laboratories PVT. Ltd India (M475, Tel: 022-25003747, Email: ccare@ himedialab.com).

(2) A 35.5g in 1000 ml distilled water, heat to boiling to dissolved the medium Completely and autoclaved at 115°C for 10 minutes.

(3) Both prepared media distributed into sterile Petri dishes and stored at 4°C where their shelf life is 14 day.

5.2.3 Culture

The specimens of each patients were placed in separate sterile Petri dish. Each specimen was inoculated on sabouraud`s dextrose medium (SDM), and Mycobio media. The inoculated plates were kept in incubator which was adjusted at 25°C- 28°C and the cultures were examined every two days. The culture considered negative if there was no growth after four weeks of incubation.

5.2.3.1 Macroscopic examination

The macroscopic examination of the dermatophytic colonies includes the color of the surface and reverse of the culture, and the presence of any pigment diffusing into the medium and the texture of the surface of the colony. There were observing fungal colonies macroscopic features should be noted as shown in Appendix V (10). The non-dermatophytic were identified according to morphologic differences in these structures, including the size, shape, texture, and color of the colonies.

5.2.3.2 Microscopic examination

Microscopic examination was made by examining many preparations from different fungal growth mounted with the lactophenol cotton blue to reveal various structures which could be of great help in identification, especially the conidia which include the large separated macroconidia and the small celled microconidia. The macroconidia of each genus and species vary in shape and character of their walls which are generally characteristic for the species or genus. The identification of Candida was based on the presence of budding cells and pseudohyphae. Microscopic examination for Candida was used Gram stain as the following:

1. Place a drop of distilled water on center of the slide, sterile loop was using for taken

a piece of colony and mixed gently and left air-dry.

2. Cover the fixed thin smear with crystal violet stain for 30-60 second.

3. Rapidly wash off the stain with tap water.

4. Tip off all the water, and cover the smear with Lugol`s iodine for 30-60 second.

5. Wash off the iodine with tap water.

6. Decolorize rapidly (few seconds) with acetone- alcohol and wash immediately with tap water.

7. Cover the smear with safranin for 2 minutes, and wash off the stain with the tap water.

8. Wipe the back of slide clean, and place in draining track for the smear to air-dry.

9. Added a drop of oil on the slid and examined it with the 100X objective.

5.3 Data analysis

Data were analyzed using statistical package for social science (SPSS) computer program, version 18. Descriptive statistic was applied, using tables, figures and central tendency.

Inferential statistics were used, as chi- square test and considered significant when p value ≤ 0.05. Figures were done by Microsoft office Excel 2007.

Results

6. Results

Eighty-six psoriatic patients with nail changes were enrolled in the study, 53 (61.6%) were males and 33 (38.4%) were females , male to female ratio was 1.6: 1 as shown in (Fig.2). The mean age of the patients in our study was 44.9 ± 13.74 years and their ages ranged between 20-75 years (Fig. 3). Twenty four (27.9%) of patients were in age group 30-39 years with no genders difference regarding age distribution (Fig. 4).The duration of disease among patients under study was 11.1± 9.4 years; minimum duration of psoriasis was 3 months and maximum was 43 years(Fig. 5). The commonest form of psoriasis seen among our patients was psoriasis vulgaris in 80 (93%) patients, psoriatic arthritis in 3 (3.5%) patients, palmoplantar in 2 (2.3%) patients and erythroderma in 1 (1.2%) patient (Fig. 6). The most common sites affected among our patients with psoriasis were hands observed in 45 (52.3%) patients followed by feet in 39 (45.3%) of the patients and periungual in 28 (32.6%) patients (Fig. 7). Psoriasis area severity index (PASI score) ranged from; mild in 27 (31.8%) patients, moderate in 35 (41.2%), severe in 23 (27%) patients (Fig. 8). Figure 9 shows 72 patients with fingernails involvement, 20 (27.8%) patients had mild psoriasis, 20 (27.8%) patients had moderate psoriasis, and 32 (44.4%) patients had severe psoriasis. There was no statistically significant between fingernails involvement and PASI score. Among 45 patients with toenails involvement , 15 (33.3%) had mild psoriasis, 14 (31.1%) had moderate skin disease and remaining 16 (35.6) suffered from severe psoriasis. There was no statistically significant between toe nails involvement and PASI score(Fig. 10). Nail examination revealed that discoloration of nail plate (Fig 11), onycholysis (Fig. 12), subungual hyperkeratosis (Fig.13) and pitting (Fig.14) were the commonest change in our patients with psoriasis. The most frequent nail changes observed on both fingernails (Fig.15) and toenails (Fig.16) was discoloration of nail plate seen in 49 (57%) patients and in 43 (50%) patients, respectively. Onycholysis was seen in

47 (54.7%) patients and subungual hyperkeratosis in 46 (53.5%) patients, pitting 43 (50%) was observed with statistically significant in fingernail changes (Table1). The less frequent fingernail changes was seen in 21 (24.4%) patients, including dystrophic nails in 8 (9.3%) patients (Fig. 17), paronychia in 7 (8.1%) patients(Fig 18), onychomediasis in 4 (4.7%) patients (Fig19), leukonychia(Fig20) and Beau`s line (Fig 21) in 1 (1.2%) for each. Whereas in toenails subungual hyperkeratosis observed in 33 (38.4%) patients and nail plate thickening in 31(36%) patients( Fig 22). other toenail changes was seen in 2 (2.3%) patients with Beau`s line. There were no statistically significant between nail involvement and the genders of patients in our study (Table 2). Among our patients with nail change 40 (46.5%) had their fingernails involved, 13 (15.1%) toenails and 33 (38.4%) both finger and toenails involved (Fig.23).

Regarding to joint involvement of the patients under study, joint pain (arthralgia) was observed in 25 (29.1%) of the patients, swelling and restricted movement (arthritis) in 3 (3.5%) of the patients (Fig.24).

All eighty-six psoriatic patients underwent mycological examination of their nail. Direct microscopy examination (KOH) was positive in 34 (39.5%) patients (Fig.25), and negative results in 52 (60.5%) patients as shown in (Table 3). Mycology cultures were revealed growth in 61 (70.9%) patients and no growth was observed in 25 (29.1%) patients (Fig.26). In 34 cases among the samples showing positive direct microscopy cultures yielded growth in 26 (42.6%) cases, while 8 (32%) cases showed no growth cultures. In 52 cases showing negative direct microscopy, cultures positive in 35 (57.4%) cases and reaming 17 (68%) cases were negative (Table 4). Figure 27 shows the most commonly isolated fungi was non-dermatophyte moulds culture in 32 (52.5%) cases, followed by Candida isolated in 16 (26.2%); and dermatophytes in 5 (8.2%)of the cases. Figure 28,29 show the most frequently non-dermatophyte moulds was Mucor species (Fig.

30) seen in 8 (16.6%) patients from fingernails. whereas in toenails the commonest isolated was Alternaria species (Fig. 31) and Pencillium species (Fig. 32) seen in 4 (13.8%) for each. Other non-dermatophyte moulds was isolated, Aspergillus nigra (Fig.33), Aspergillus flavus (Fig.34), Aspergillus species (Fig. 35), Scopulariopsis species (Fig.36), Cladosporium species (Fig.37), and Fusarium species (Fig.38). Candida (Fig.39) were isolated in 13 (27%) in fingernails and in 3 (10.3%) patients isolated from toenails. Dermatophytes were detected in 5 (8.2%) patients including Trichophyton mentagrphytes (Fig 40) was isolated from both finger and toenails. Trichophyton Schoenleinii (Fig 41), Trichophyton violaceum (Fig 42) for each isolated from fingernails, Trichophyton verrucosum was isolated from toenails (Fig.43). Eight cases (13.1%) had mixed growth in culture (Fig44).

Table 1: Distribution of patients according to finger nails &toe nails examination.

Examination	Finger nails				Toe nails			
	Yes		No		Yes		No	
	No	%	No	%	No	%	No	%
Pitting	43	50	43	50	5	5.8	81	94.2
Onycholysis	43	50	43	50	12	14	74	86
Subungaul hyperkeratosis	46	53.5	40	46.5	33	38	53	62
	31	36	55	64	8	9.3	78	90.7

Pitting:X^2 = 41.728. df = 1 ,p= 0.0001(Significant).

Onycholysis: X^2 =25.686, df = 1 , p= 0.0001(Significant).

Subungual hyperkeratosis: X^2 =.9563, df = 1 , p= 0.047 (Significant).

Table II: Distribution of patients according to involvement of nails and sex .

Involvement	Sex					
	Female		Male		Total	
	No.	%	No.	%	No.	%
Finger nails	16	48.5	24	45.3	40	46.5
Toe nails	5	15.1	8	15.1	13	15.1
Both	12	36.4	21	39.6	33	38.4
Total	33	100	13	100	46	100

Table III: Distribution of patients according to KOH results .

Direct microscopic examination	Finger nail		Toe nail		Both		Total	
	No.	%	No.	%	No.	%	No.	%
KOH Positive	17	42.5	5	38.5	12	36.4	34	39.5
KOH Negative	23	57.5	8	61.5	21	63.6	52	60.5
Total	40	100	13	100	33	100	86	100

Table IV: Distribution of patients according to result of KOH and culture results .

KOH result	Culture result				Total	
	Positive		Negative			
	No.	%	No.	%	No.	%
Positive	26	42.6	8	32	34	39.5
Negative	35	57.4	17	68	52	60.5
Total	61	100	25	100	86	100

X^2=0.209. df=1 ; p= 0.647 (Not significant).

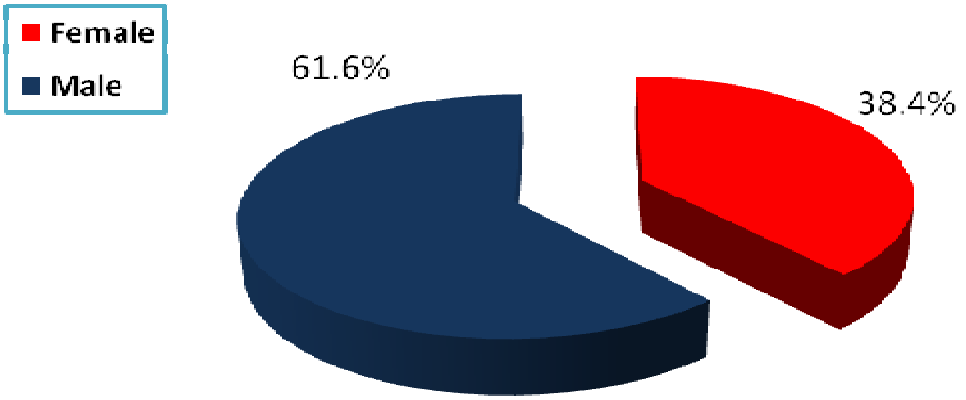

Fig 2:Distribution of patients according to sex .

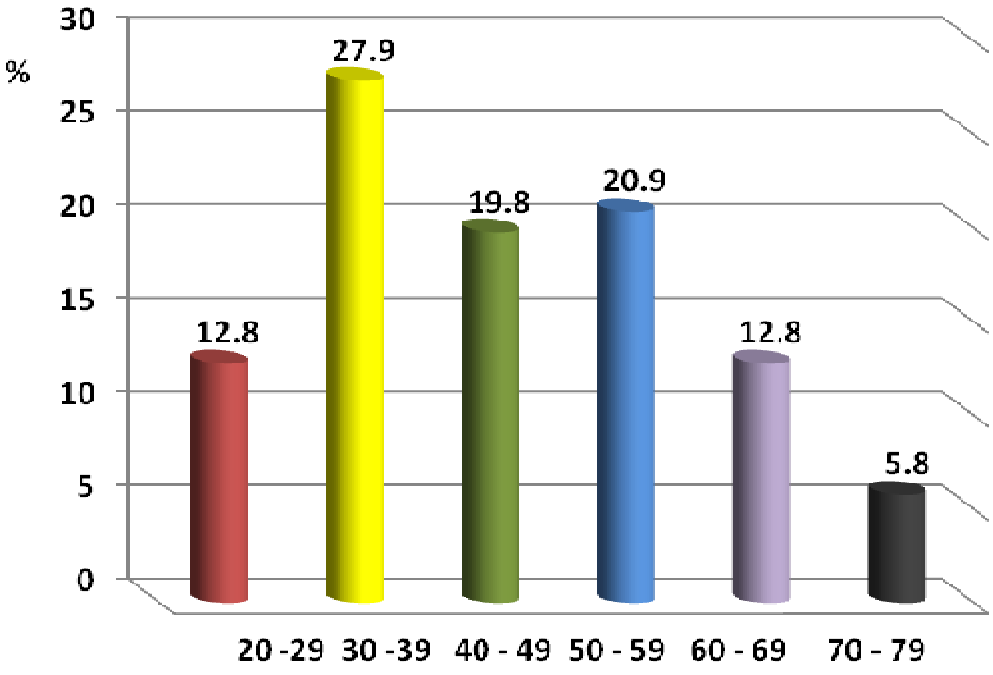

Fig. 3:Distribution of patients according to age .

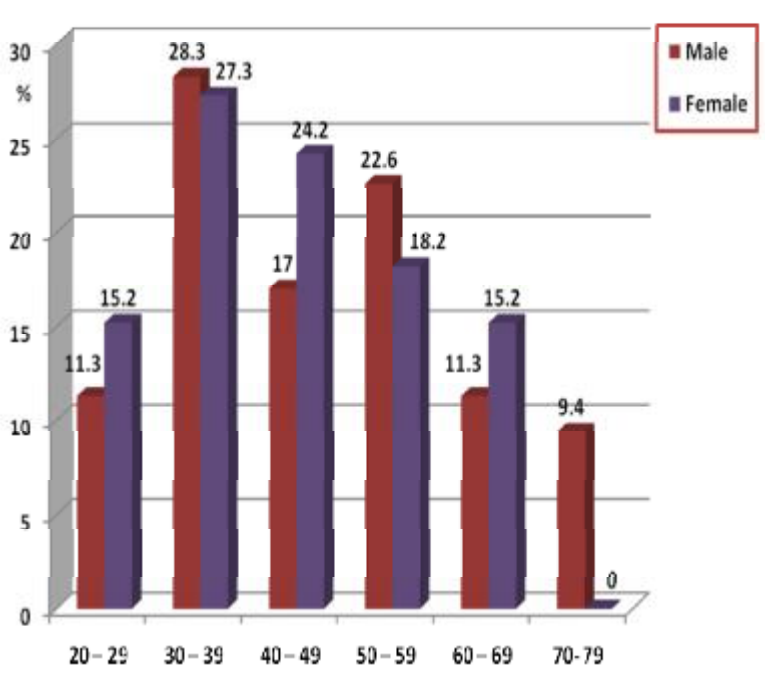

Fig. 4: Distribution of patients according to age and sex.

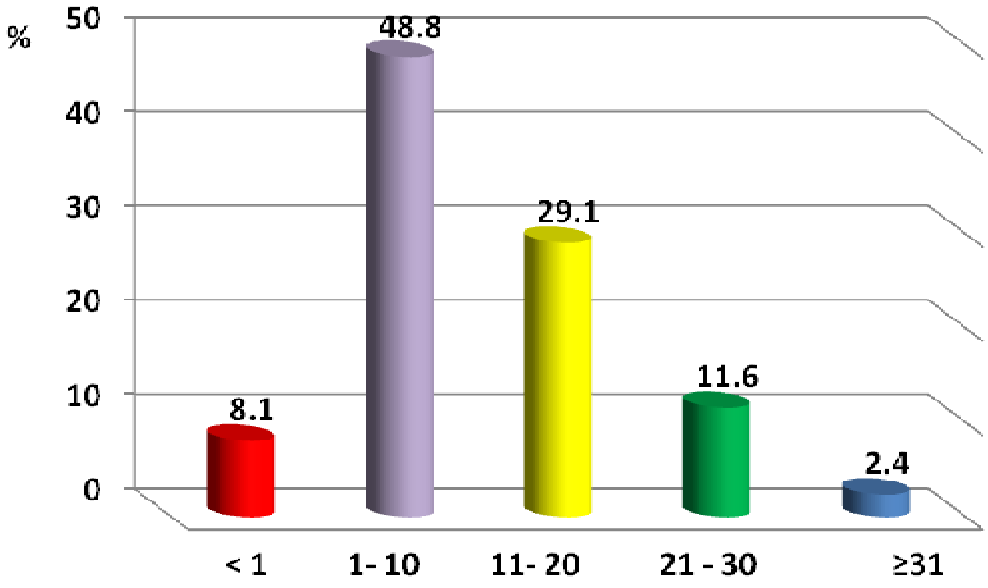

Fig. 5:Distribution of patients according to duration of disease .

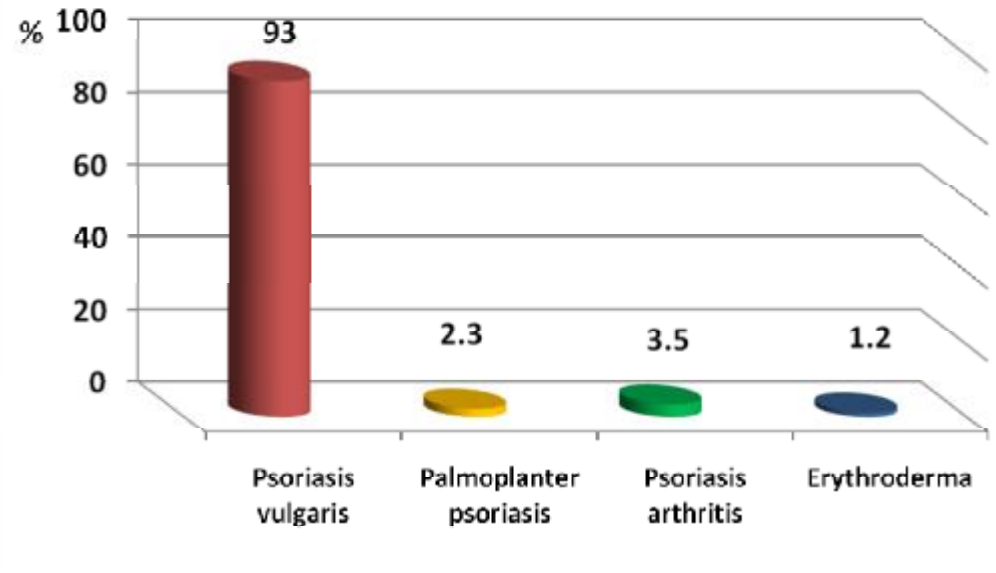

Fig. 6 :Distribution of patients according to clinical type of psoriasis.

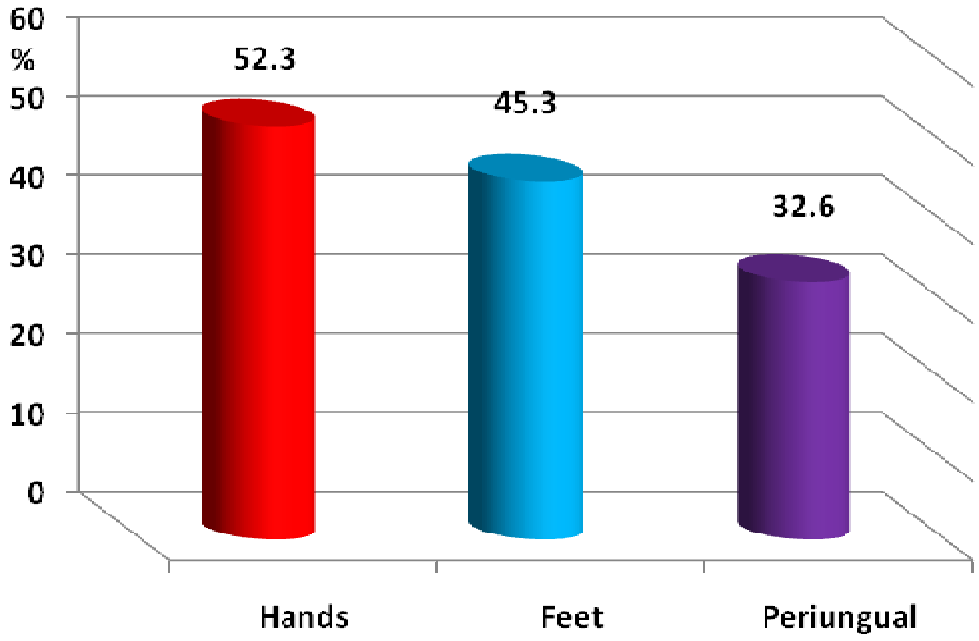

Fig.7 :Distribution of patients according to site of involvement .

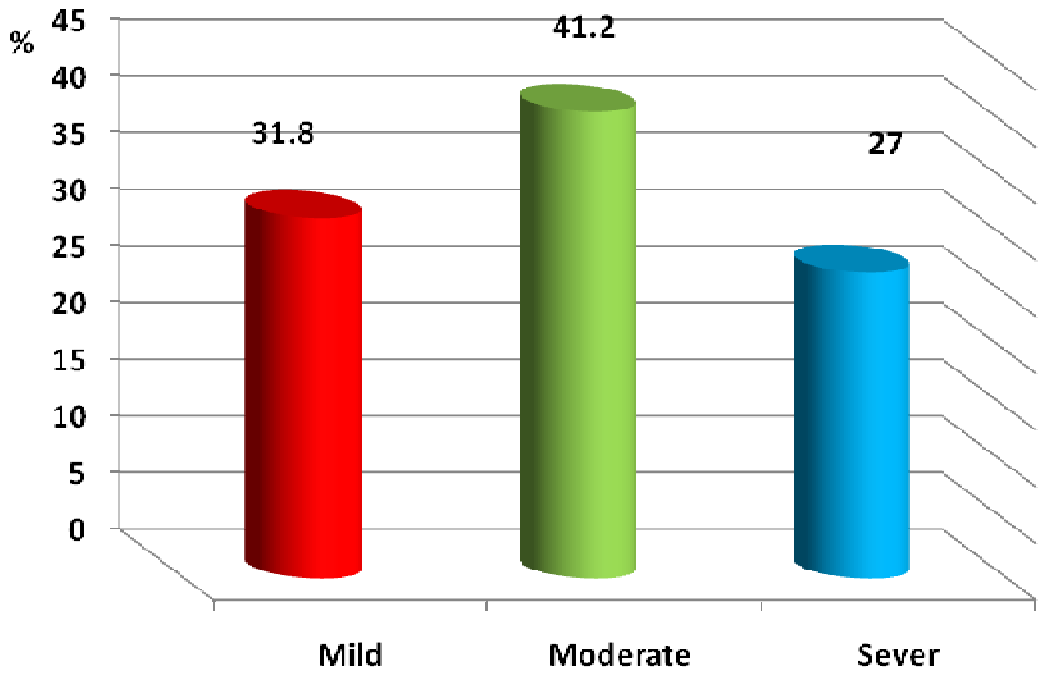

Fig. 8 : Distribution of patients according to PASI.

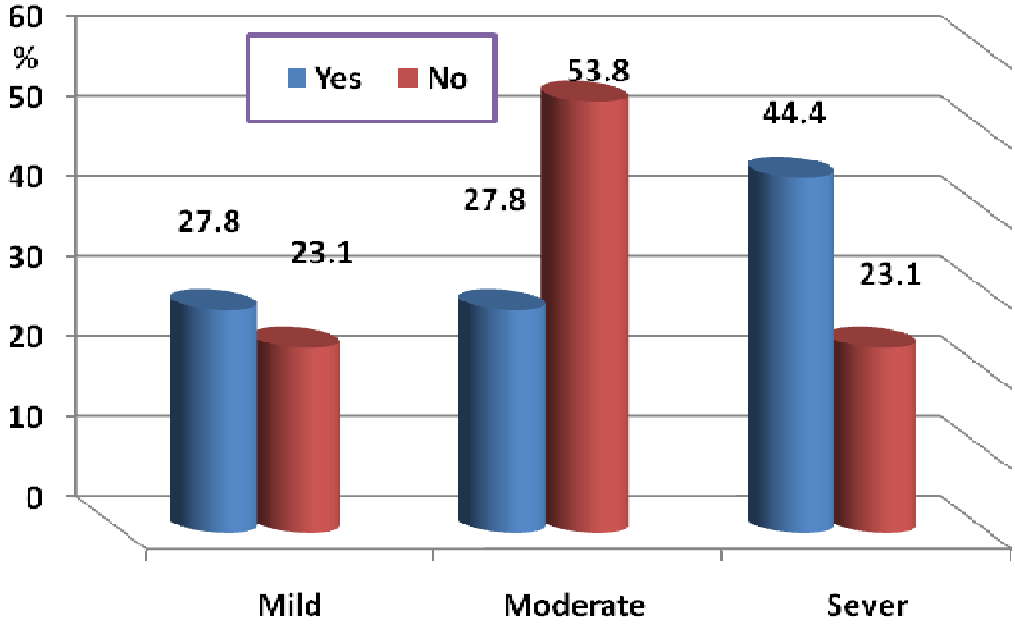

Fig.9: Distribution of patients according to PASI and finger nail involvement. X^2**= 3.667, df= 2 , p= 0.160(Non-significant).**

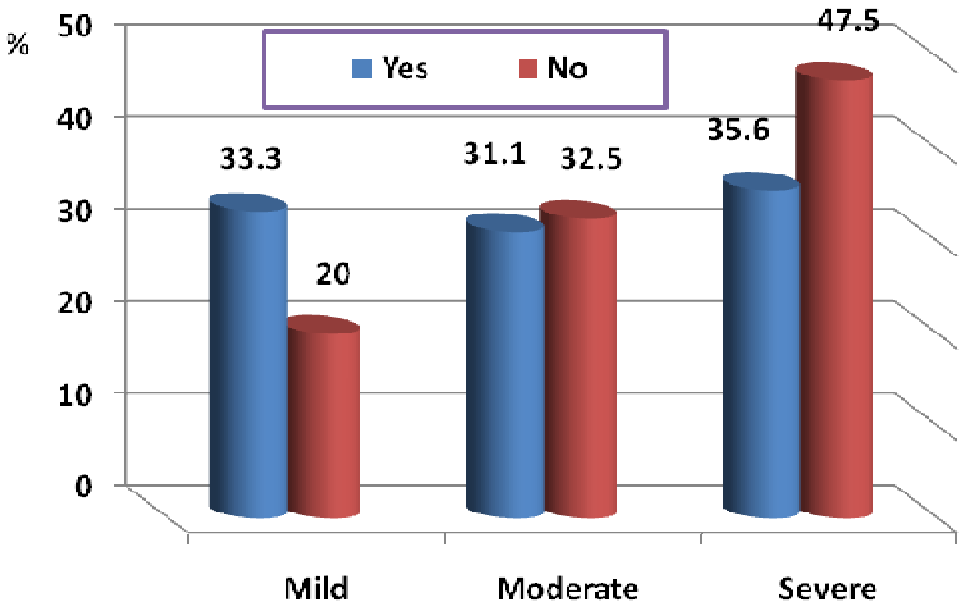

Fig 10: Distribution of patients according to severity and toe nail involvement . X^2= 2.138. df=2 ; p= 0.343 (Not significant).

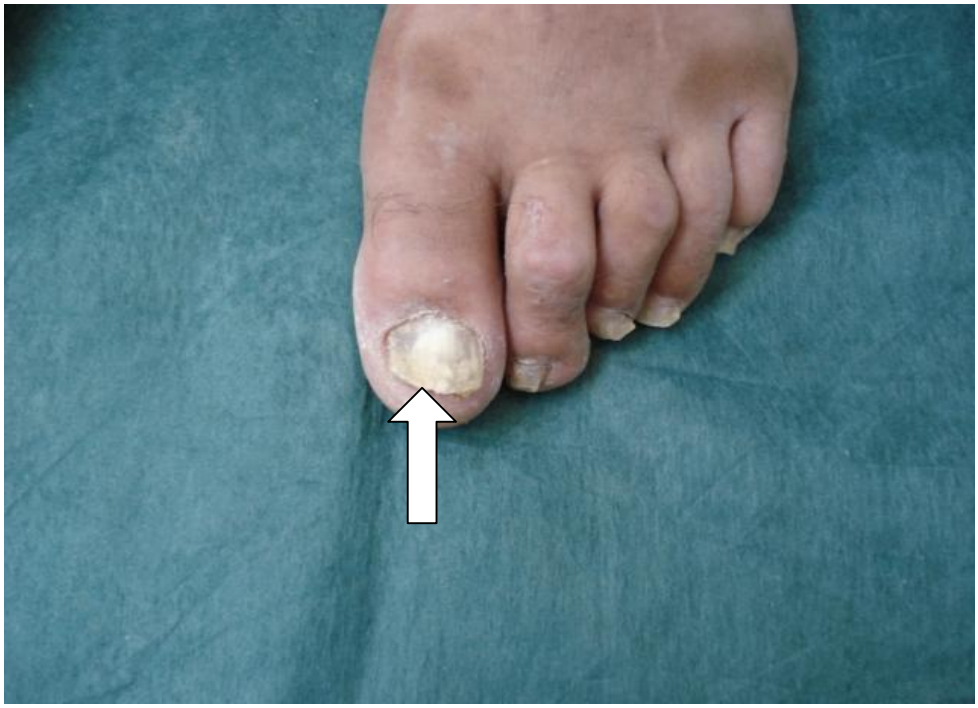

Fig 11: Discoloration of nail plate

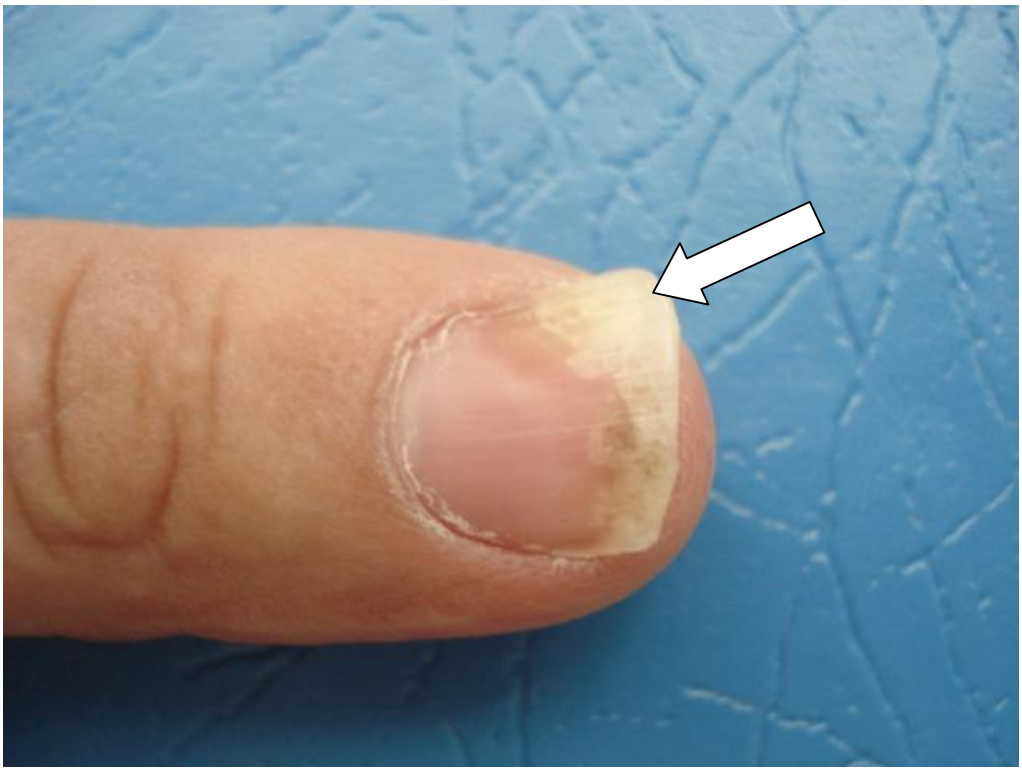

Fig. 12: Onycholysis

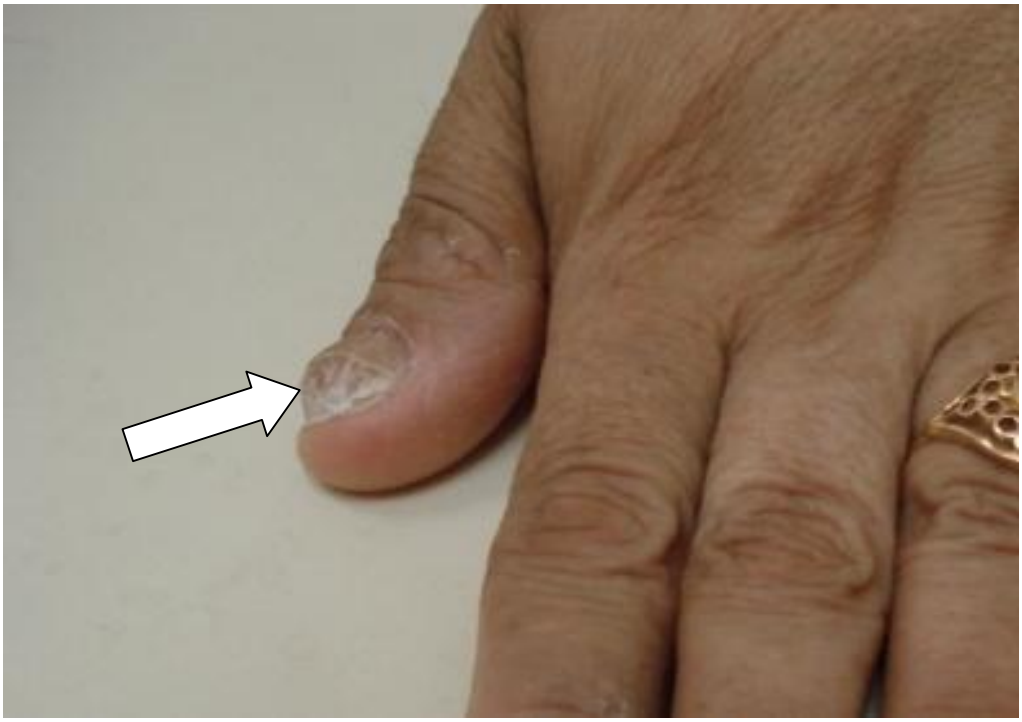

Fig. 13 : Subungual hyperkeratosis

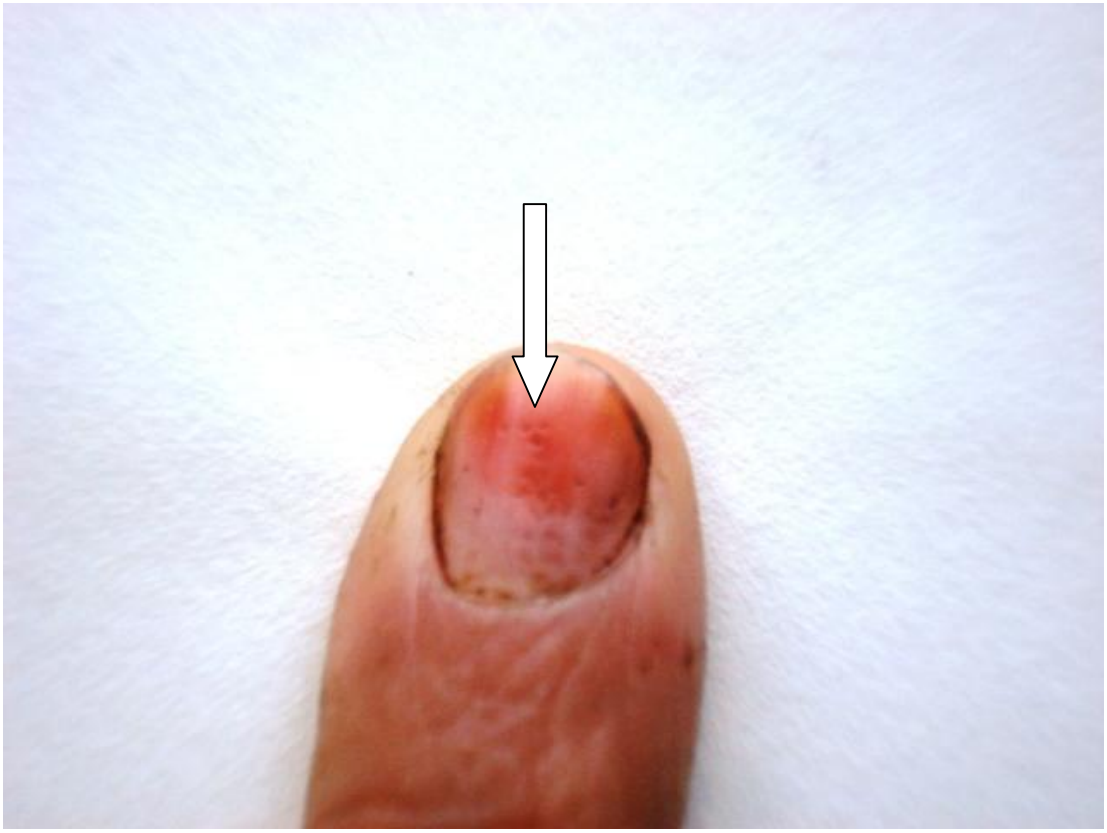

Fig 14: pitting

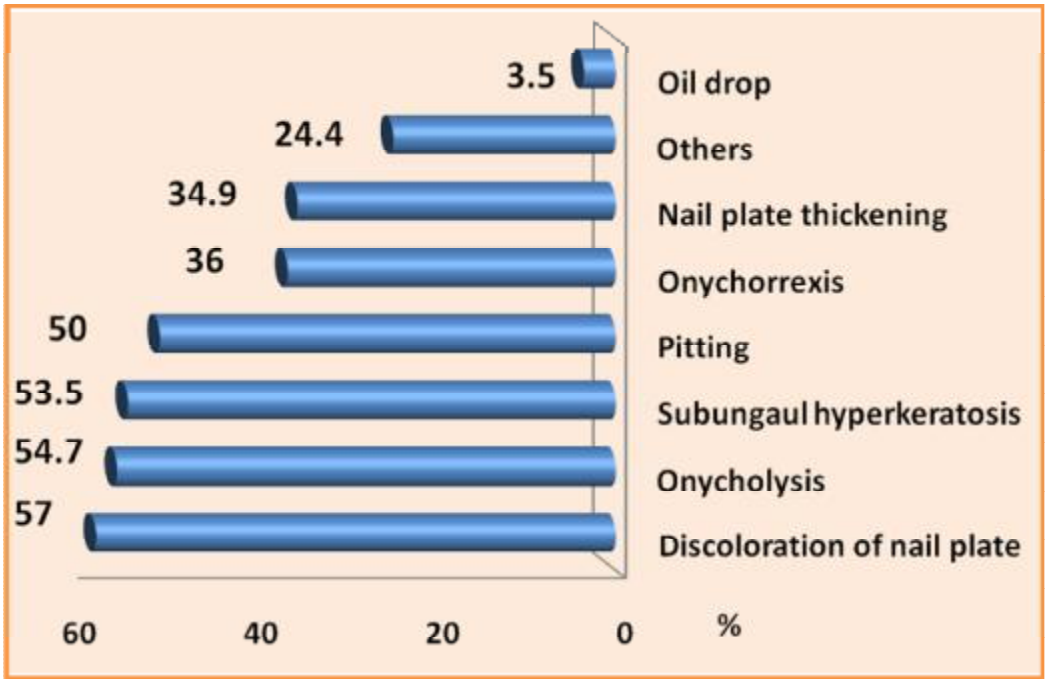

Fig.15:Distribution of patients according to finger nails examination.

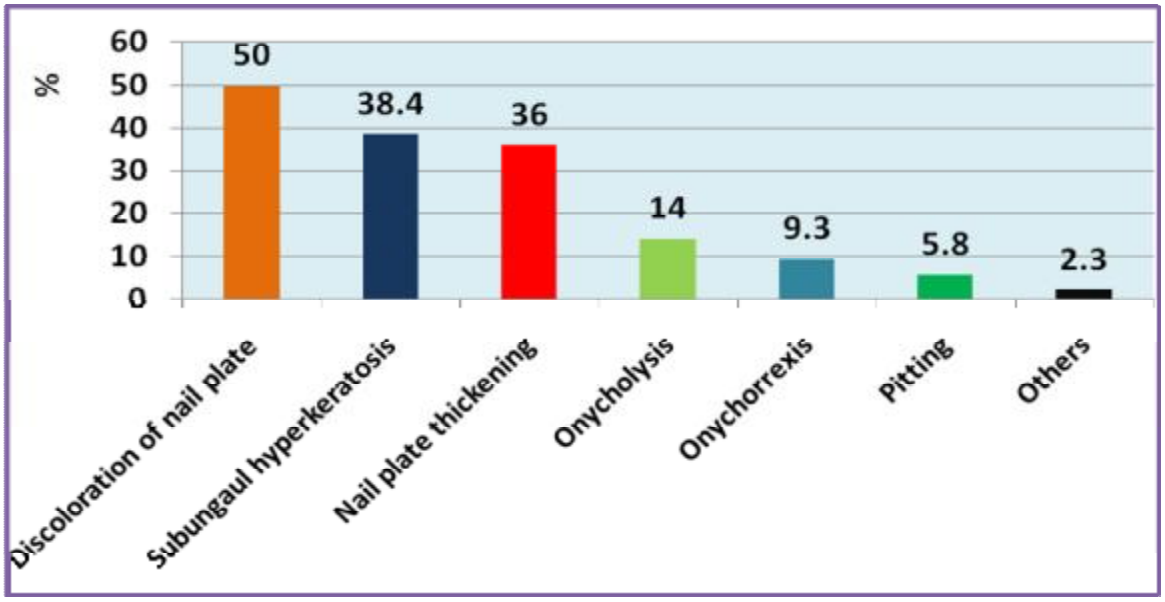

Fig.16:Distribution of patients according to toe nails examination.

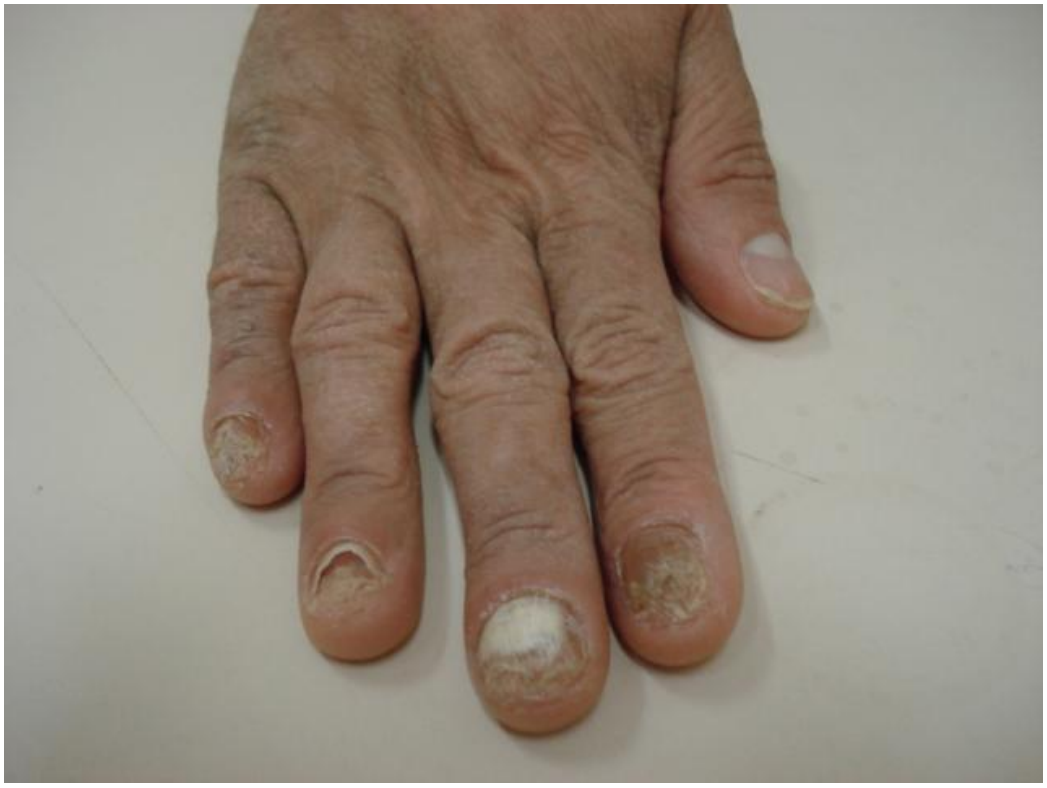

Fig.17: Dystrophic nails

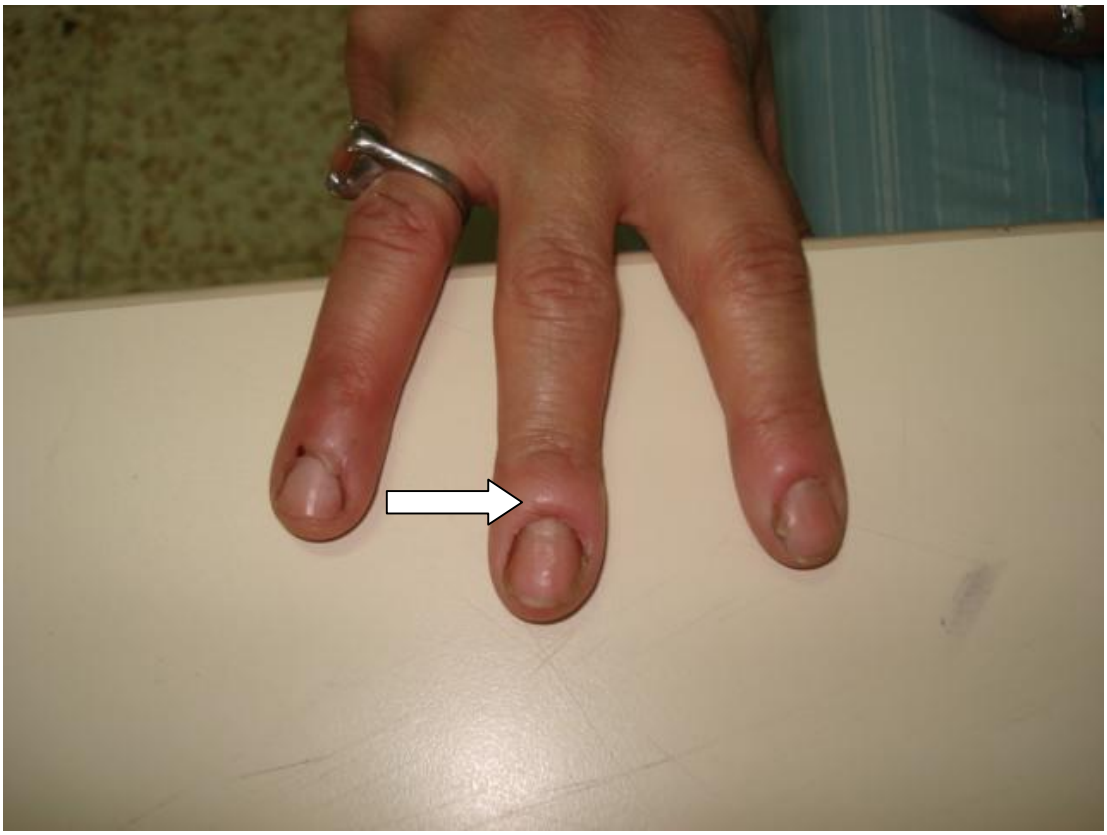

Fig. 18: Paronychia

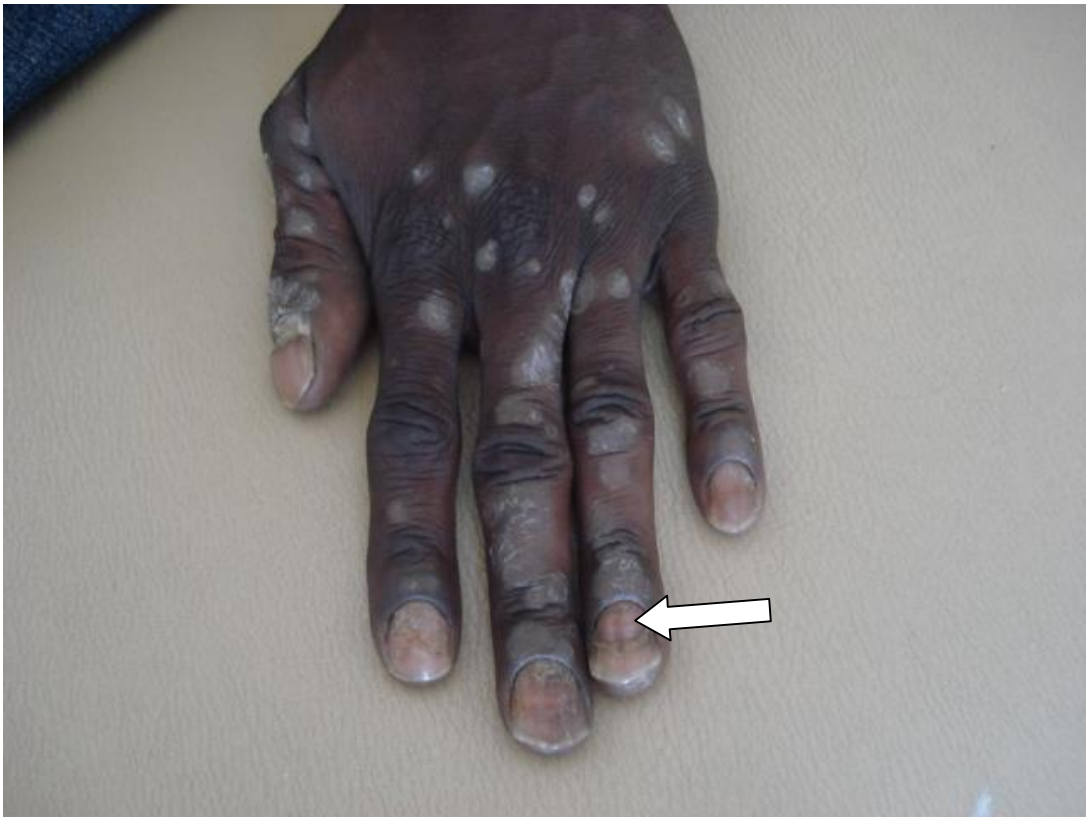

Fig. 19: Onychomediasis with periungual scaling.

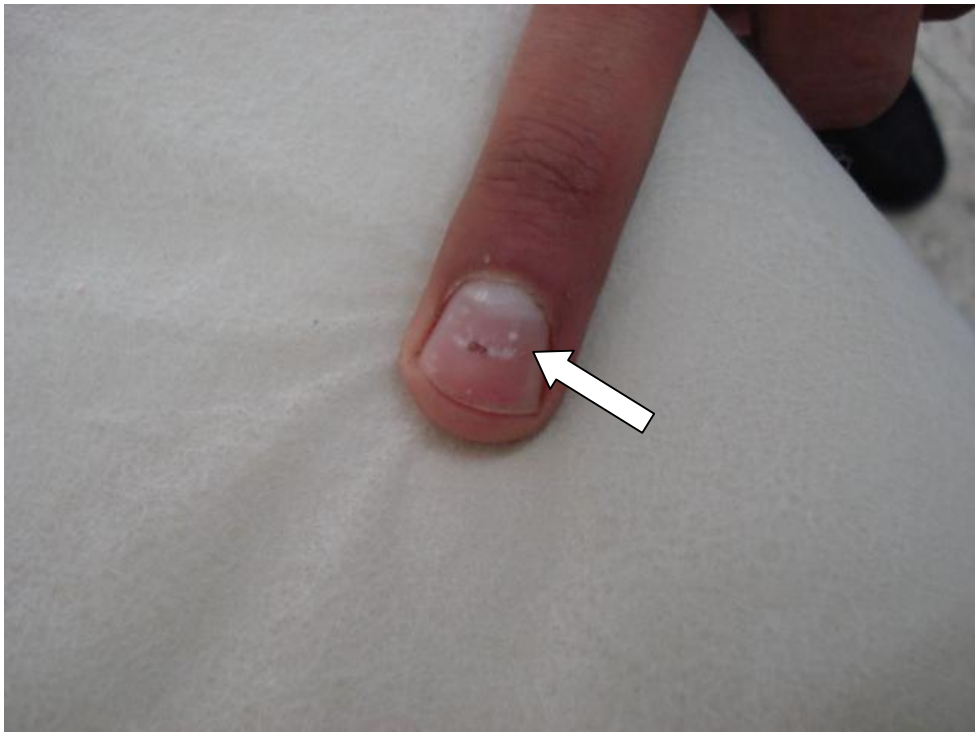

Fig. 20 : Leukonychia

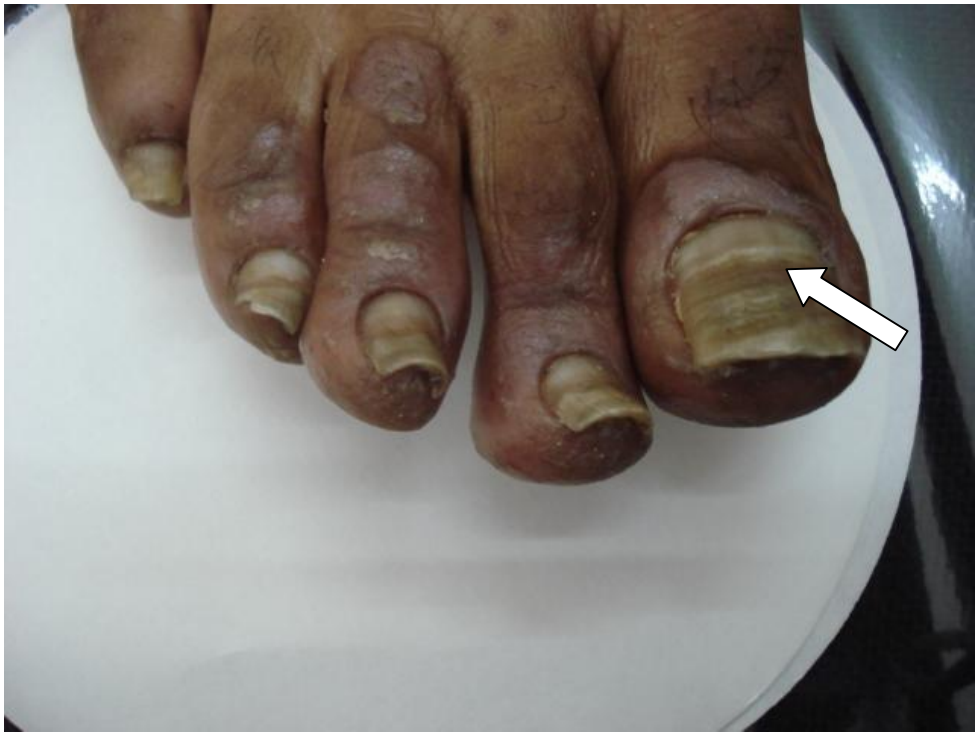

Fig 21: Beau's line with periungual scaling

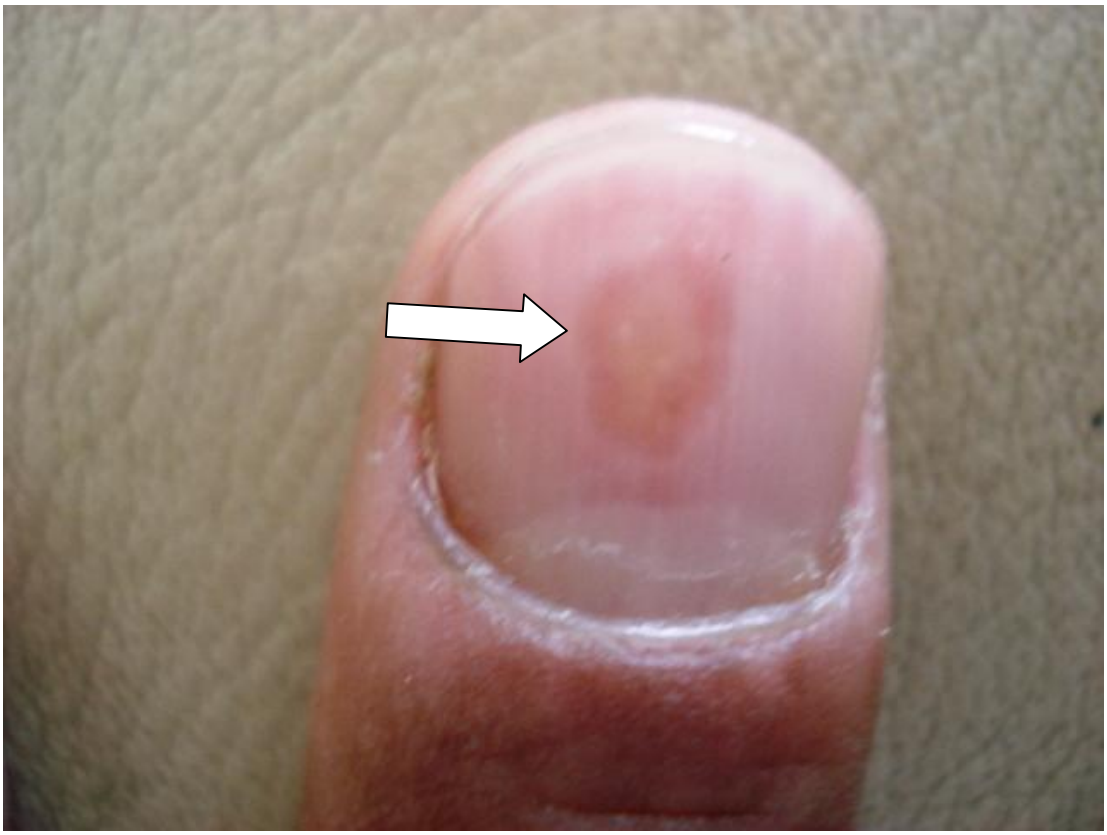

Fig. 22 : Oil drop

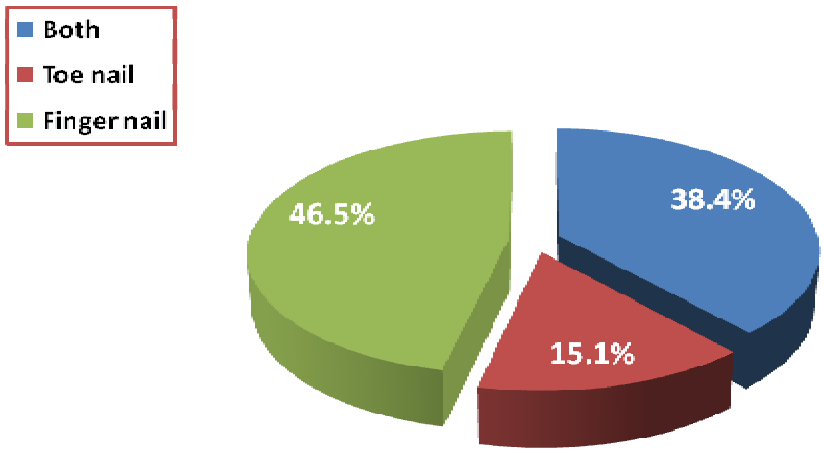

Fig. 23.: Distribution of patients according to nail involvement.

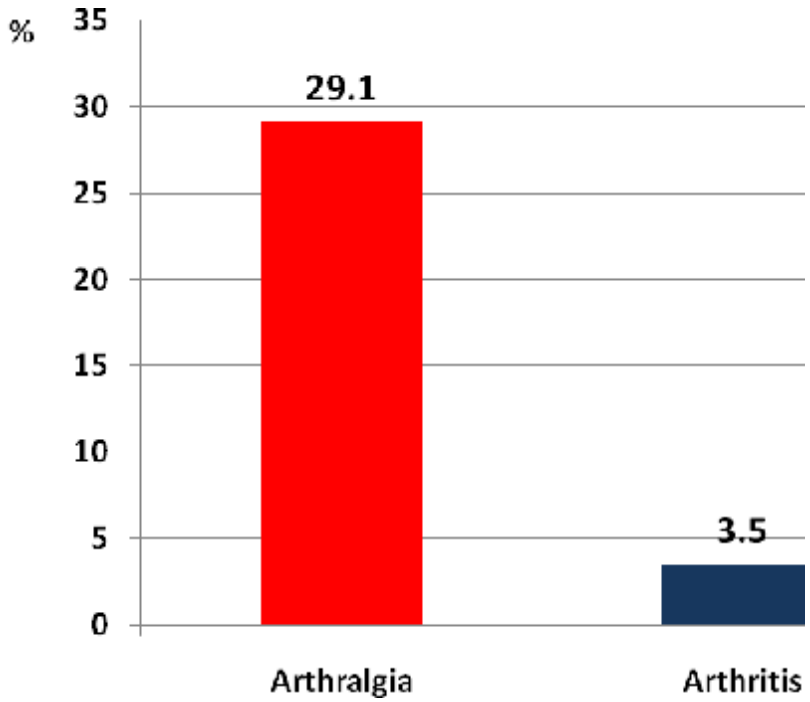

Fig. 24 :Distribution of patients according to joint involvement .

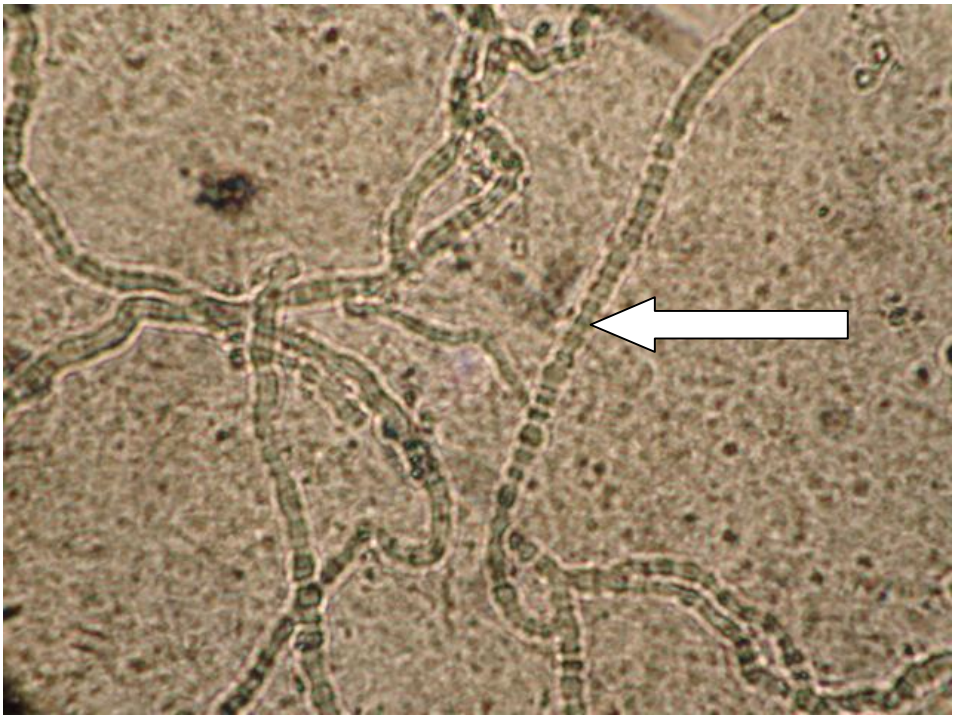

Fig (25–a):Fingernail scarping, KOH examination positive arthroconidia

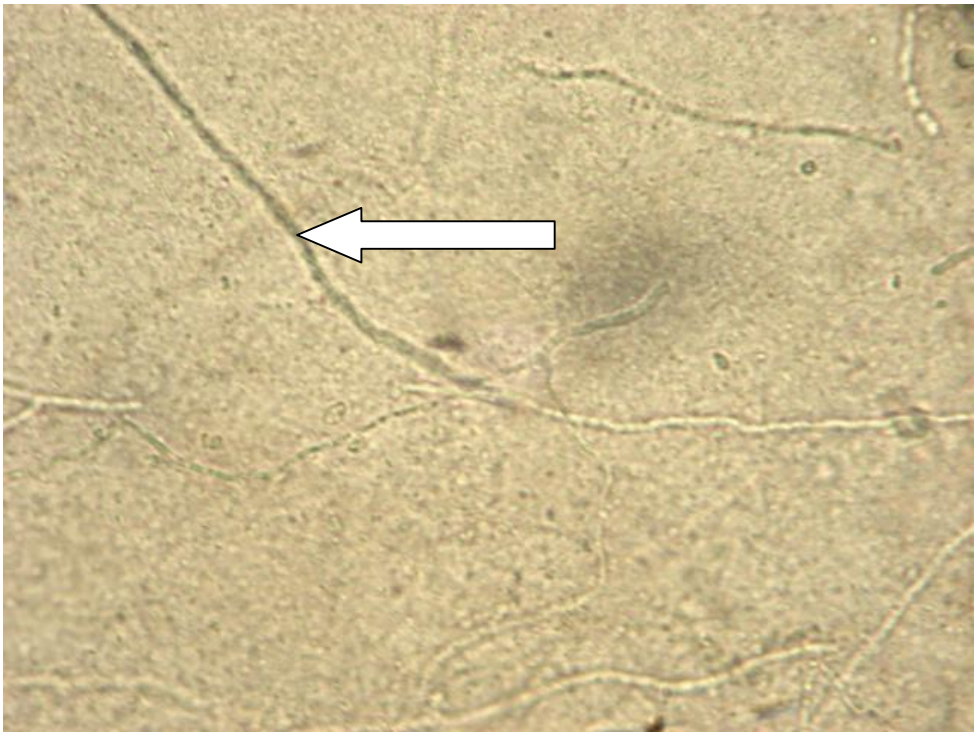

Fig (25-b): Toenail scarping, KOH examination positive hyphae

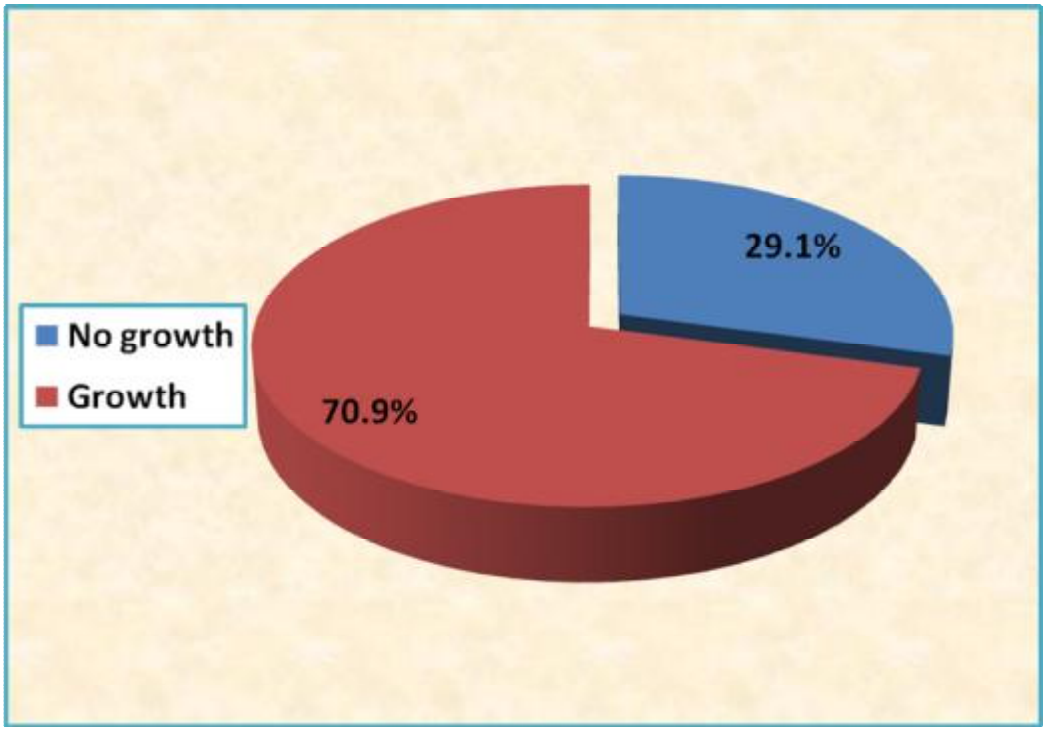

Fig.26: Distribution of patients according to the result of culture growth.

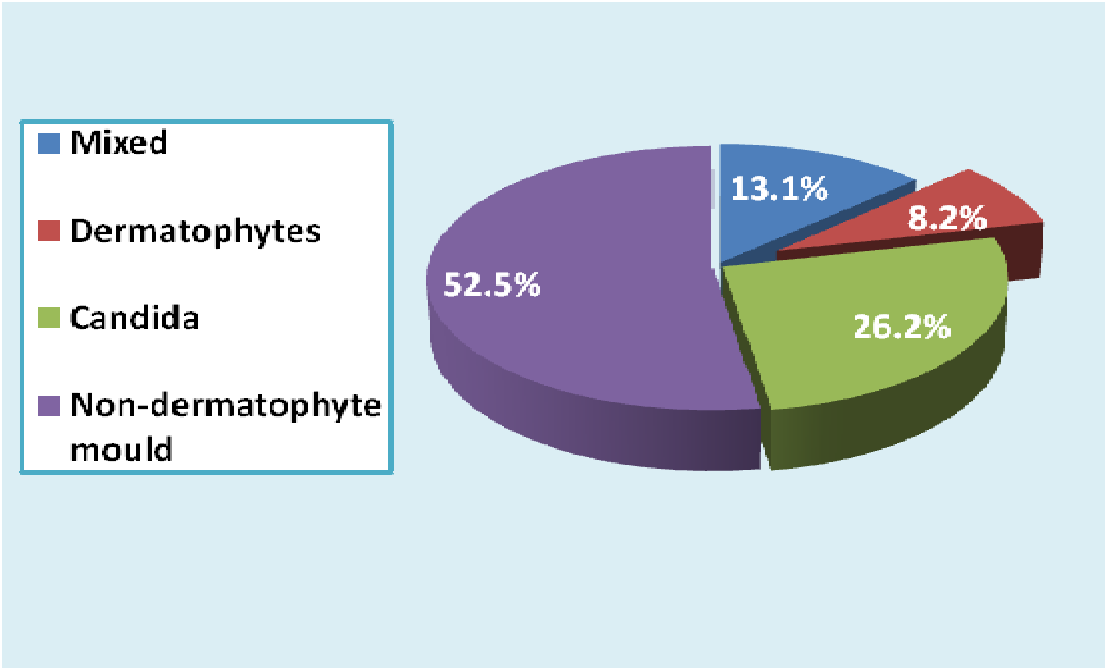

Fig. 27: Types of fungal cultures growth.

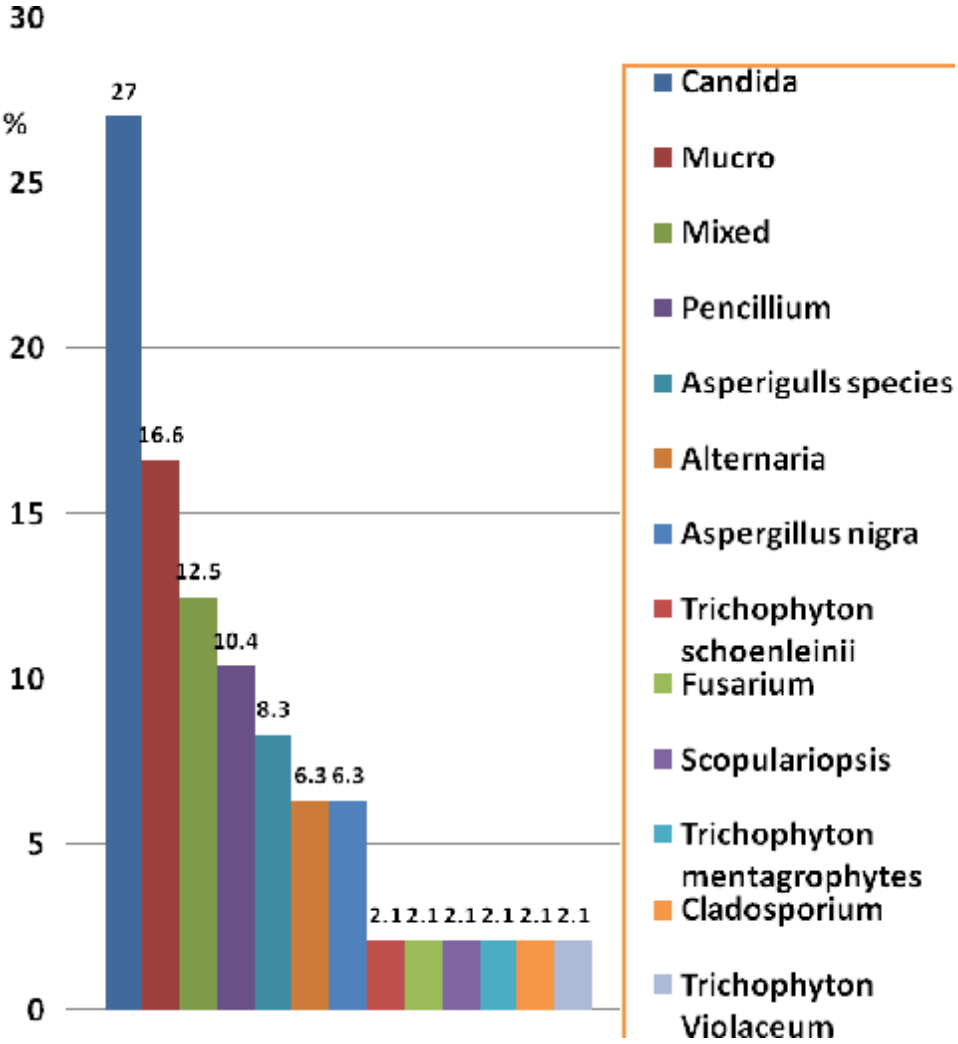

Fig. 28 :Distribution of patients according to type of species for the finger nails.

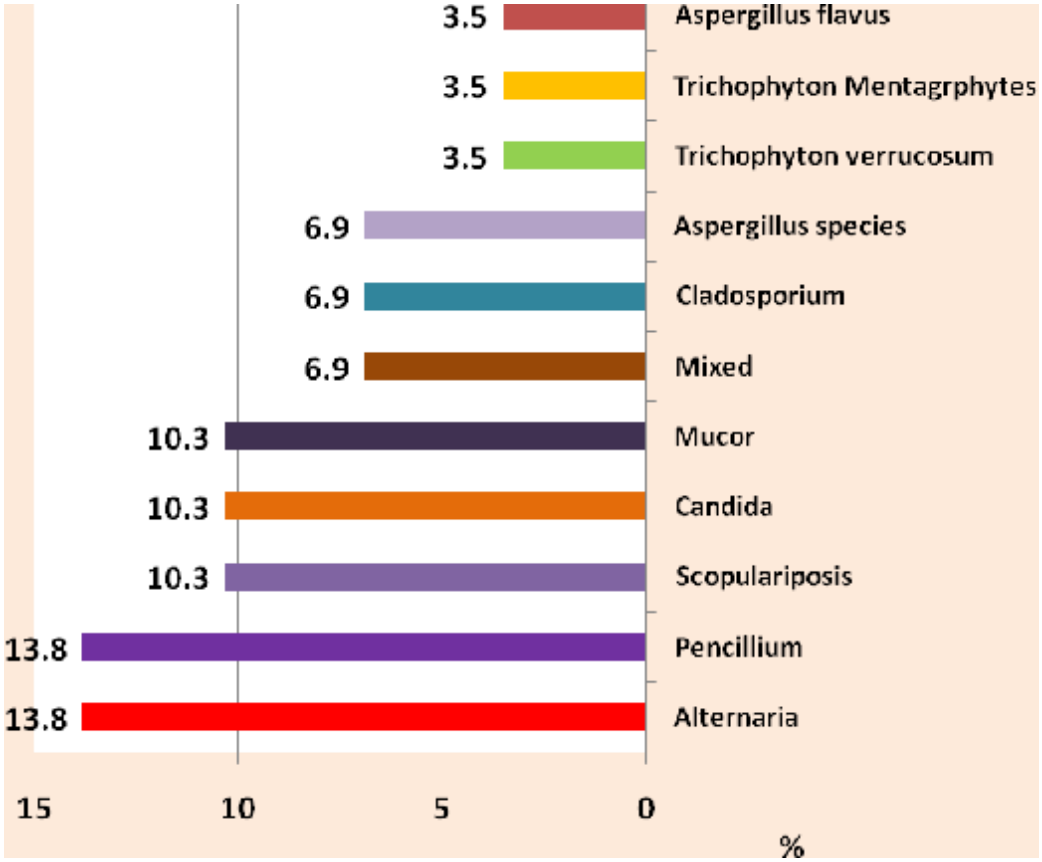

Fig. 29:Distribution of patients according to type of species for the toe nail .

Fig. (30-a): Mucro colony.

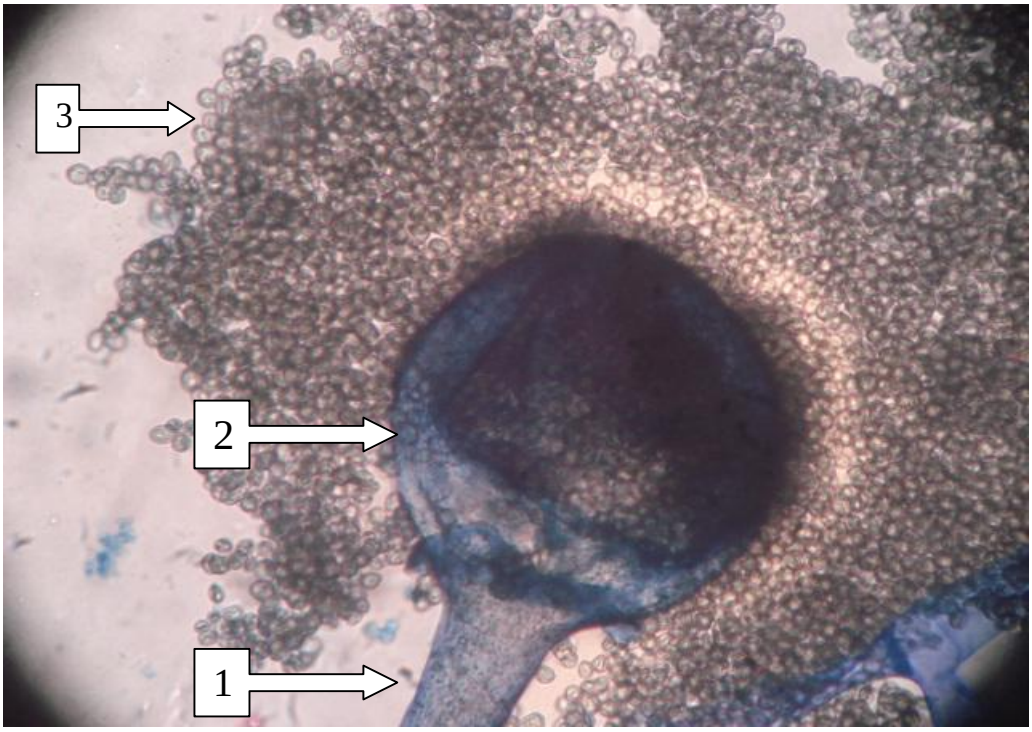

Fig. (30-b): Microscopic: condiphora (1), vesicle (2), conidia (3).

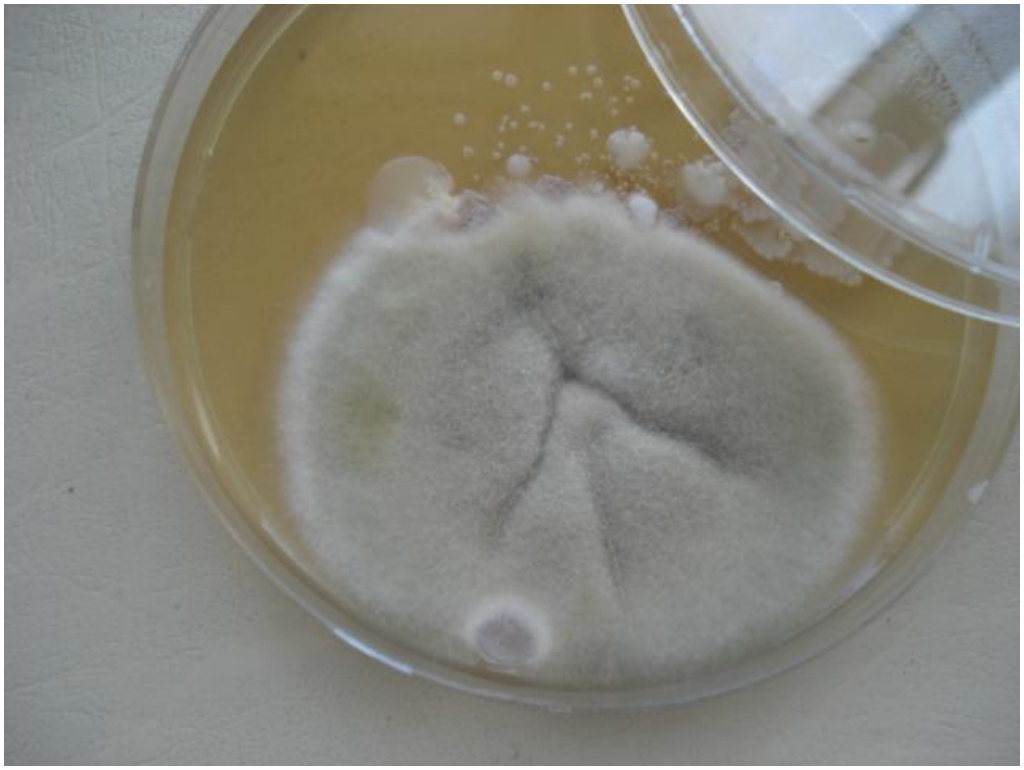

Fig. (31-a): Alternaria colony.

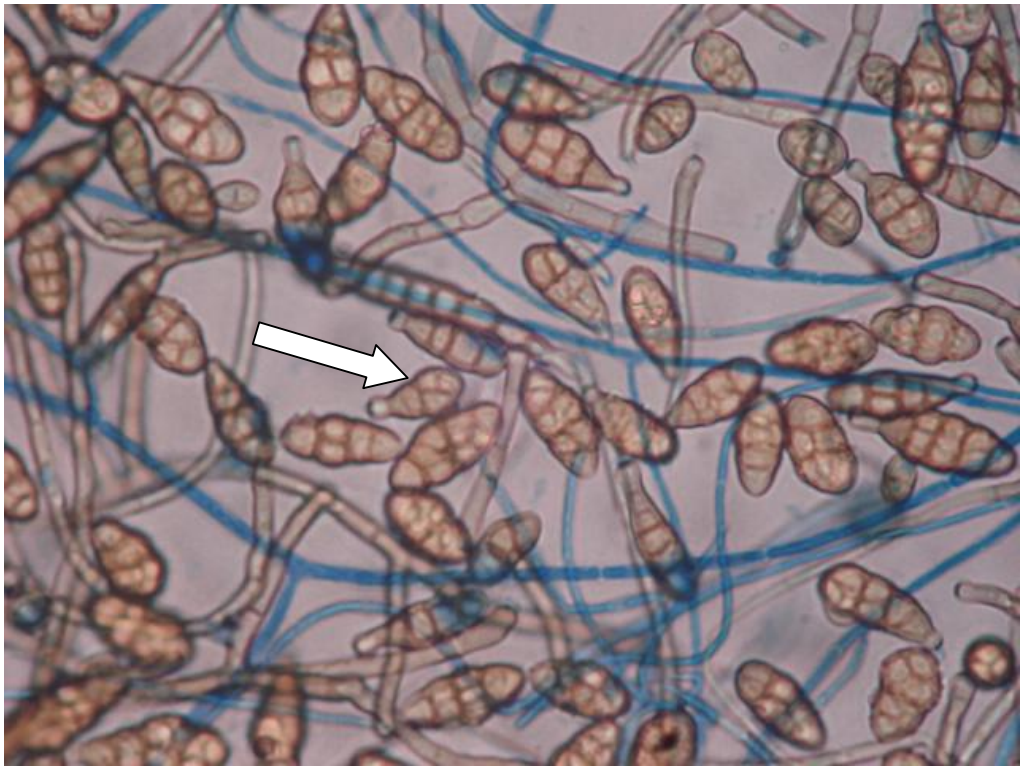

Fig. (31-b): Microscopy, multicelluar macroconidia.

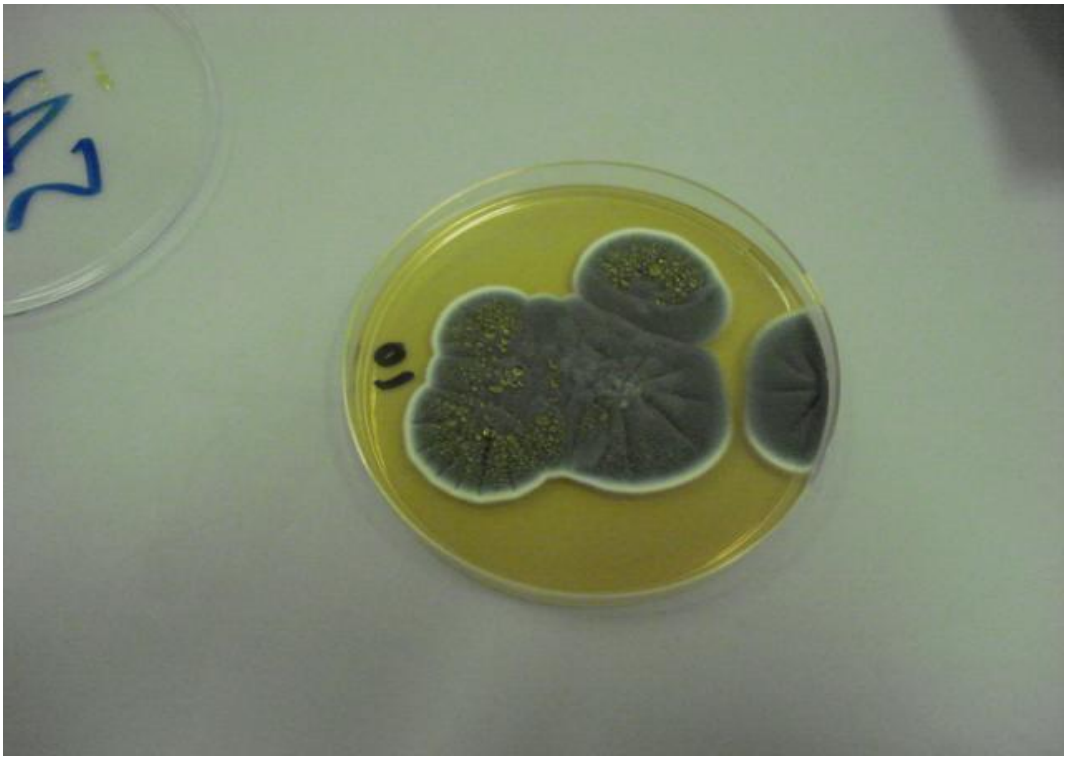

Fig. (32-a): Pencillium colony.

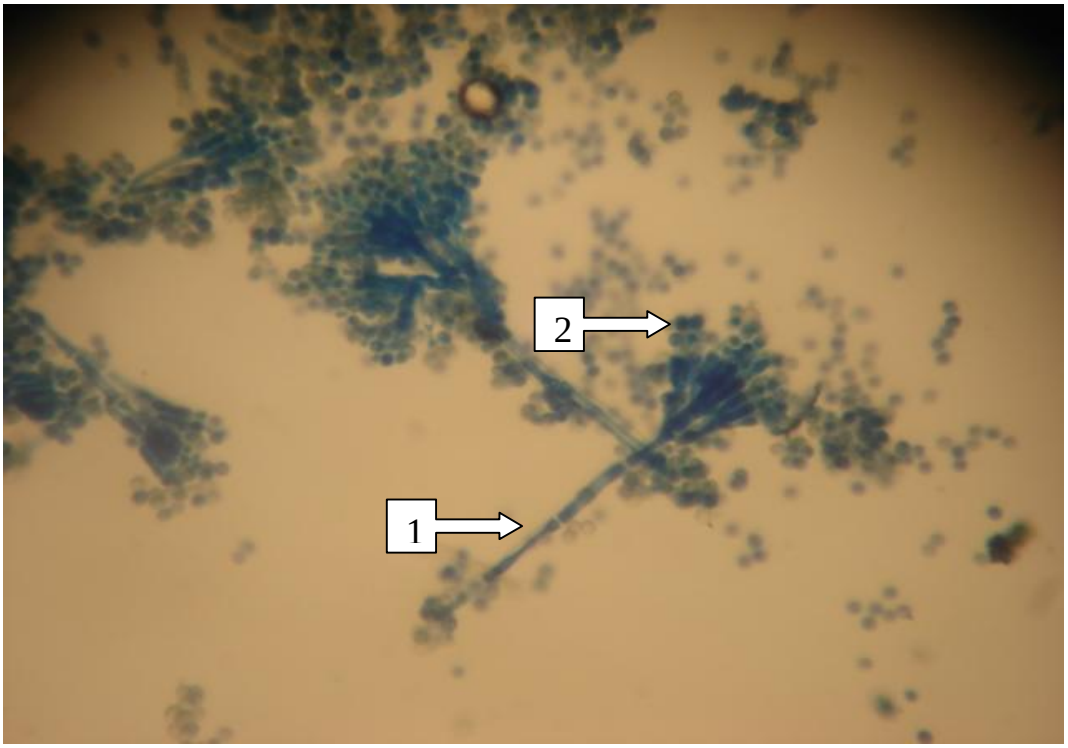

Fig. (32-b): Microscopy, (1) conidiophores and (2) conidia.

Fig. (33-a): Aspergillus nigra colony.

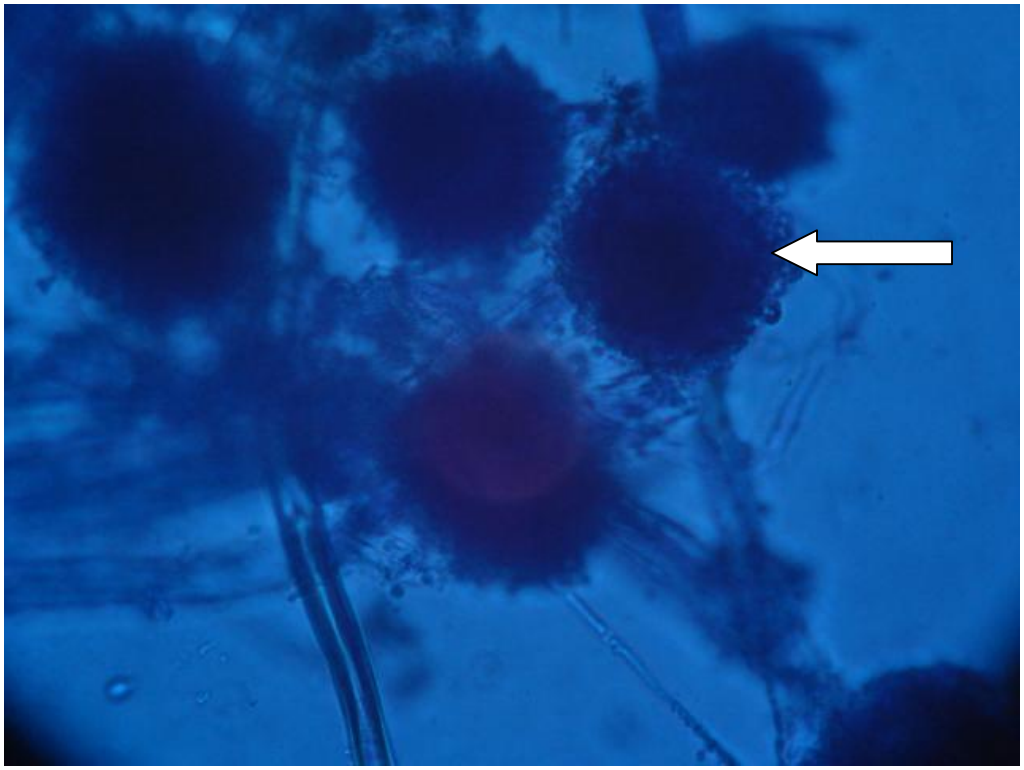

Fig (33-b): Microscopy, large spore black head.

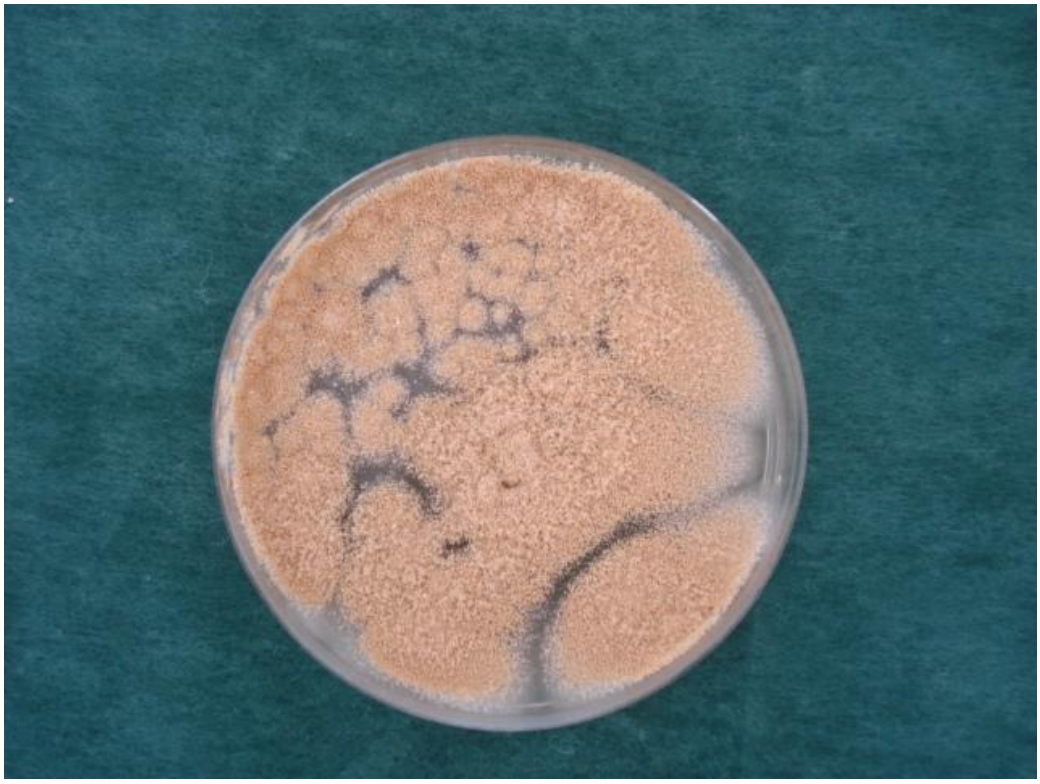

Fig. (34-a): Aspergillus flavus colony

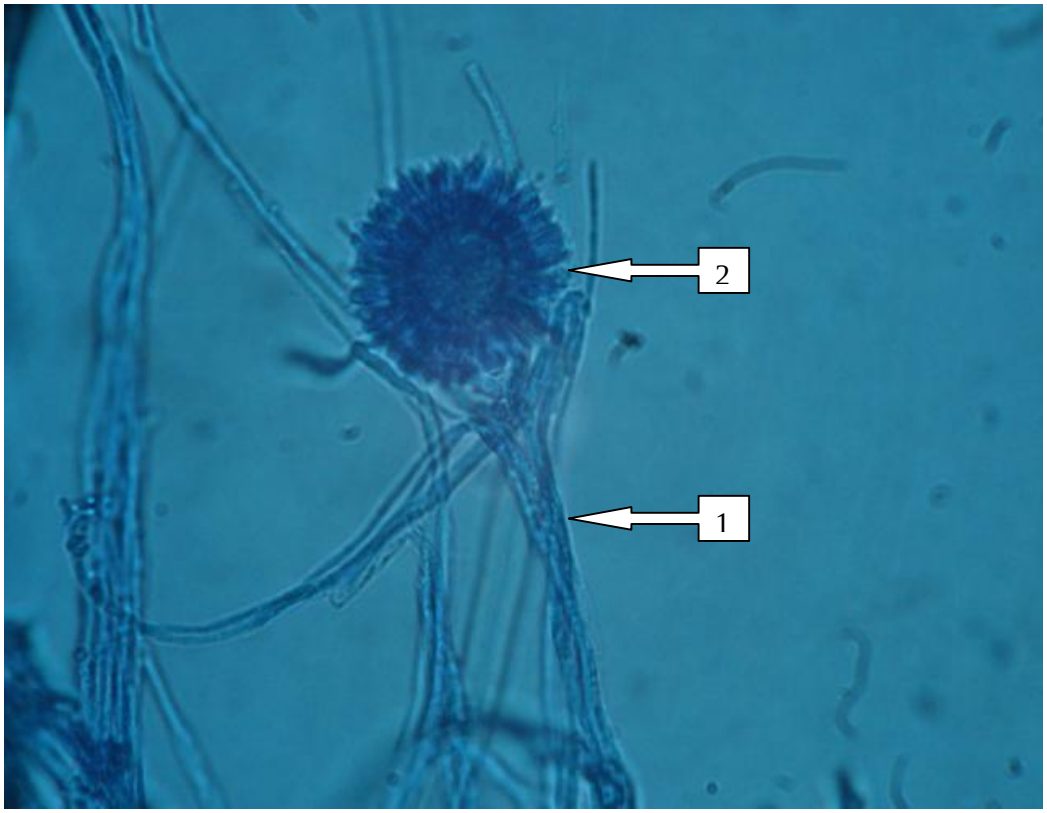

Fig. (34-b): Microscopy, conidiophores(1) with vesicles(2)

Fig. (35-a): aspergillus species colony

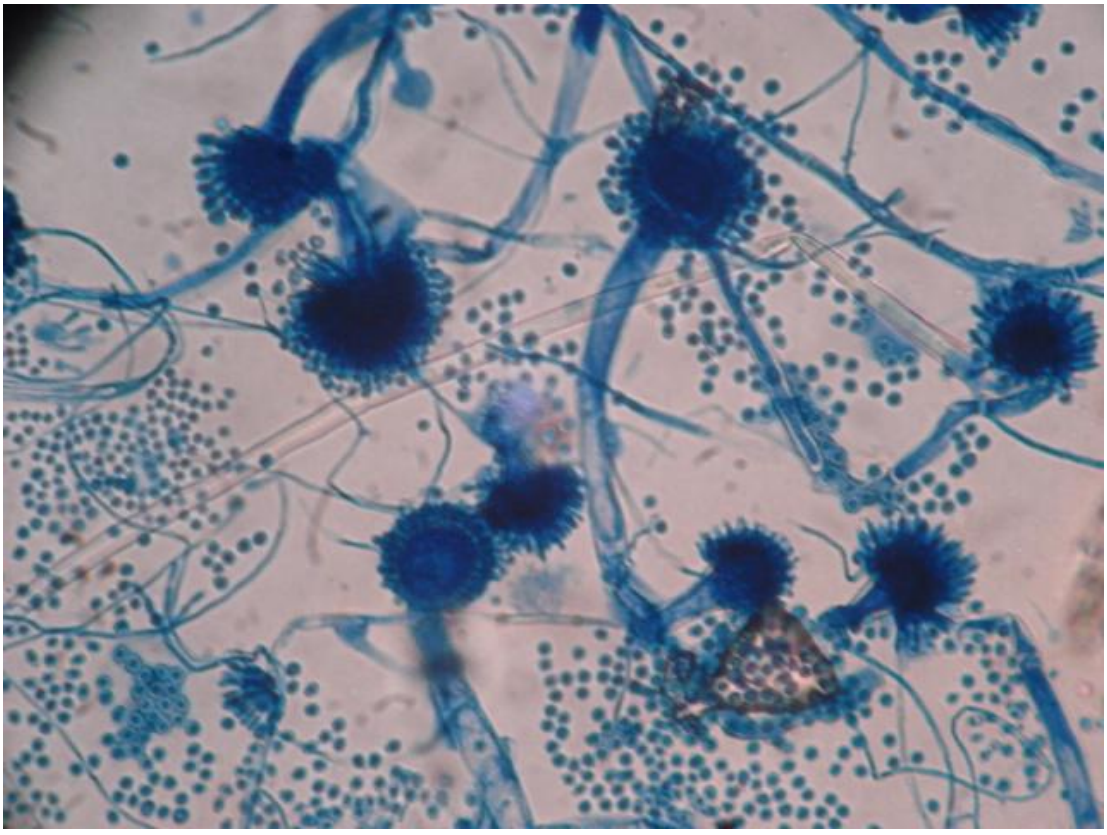

Fig. (35-b): Microscopy, conidiophores

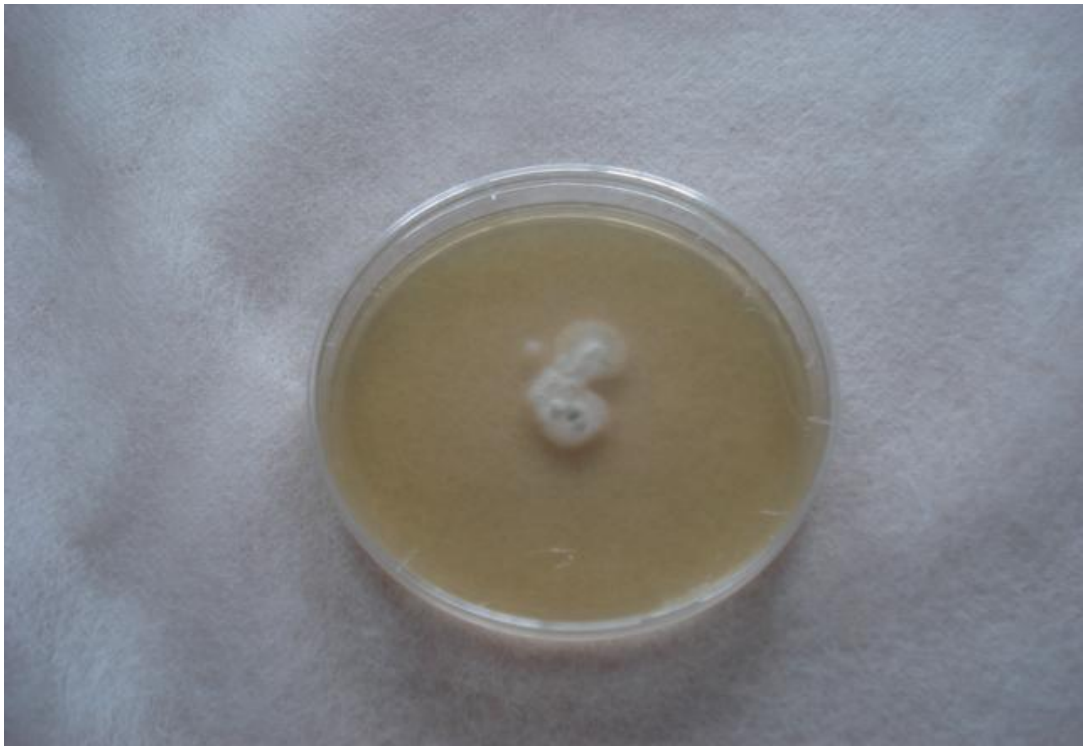

Fig. (36-a): Scopulariopsis colony.

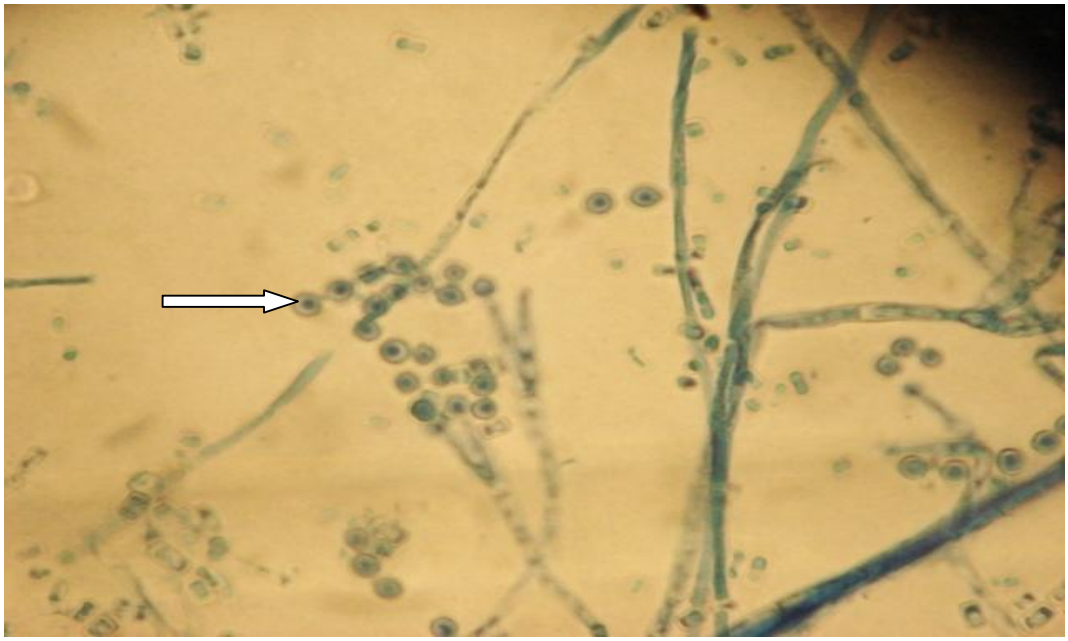

Fig. (36-b): Microscopy, chains of rough-walled& oval or lemon-shaped conidia.

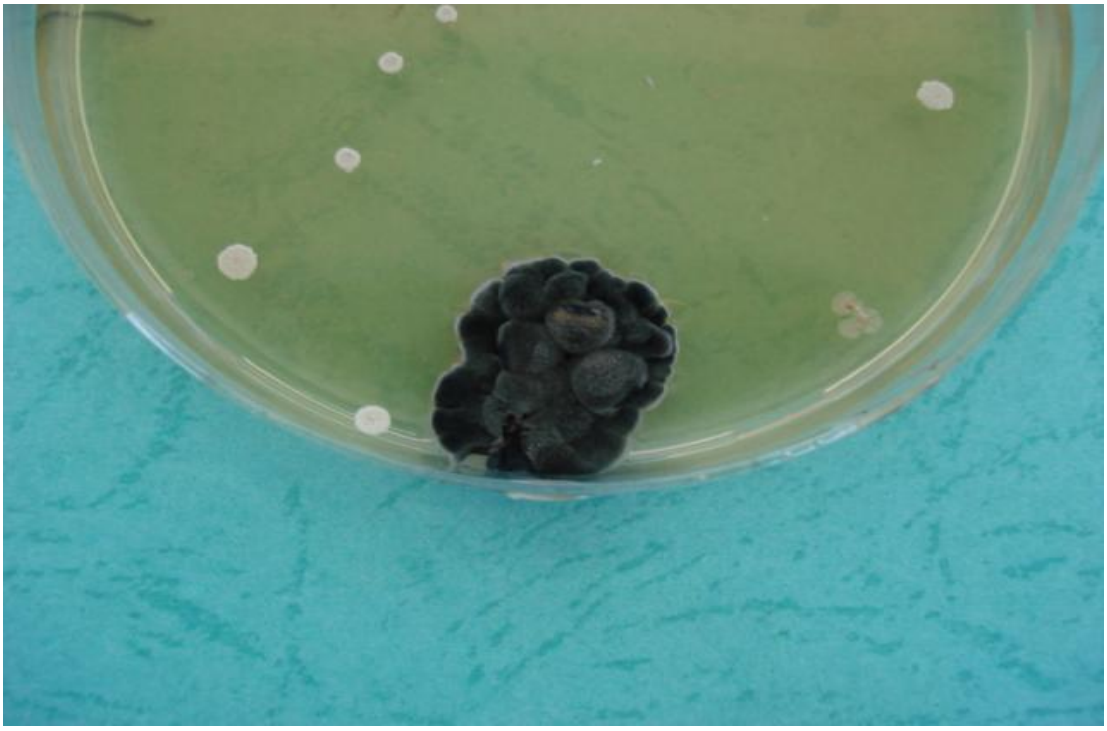

Fig. (37-a): Cladosporium colony.

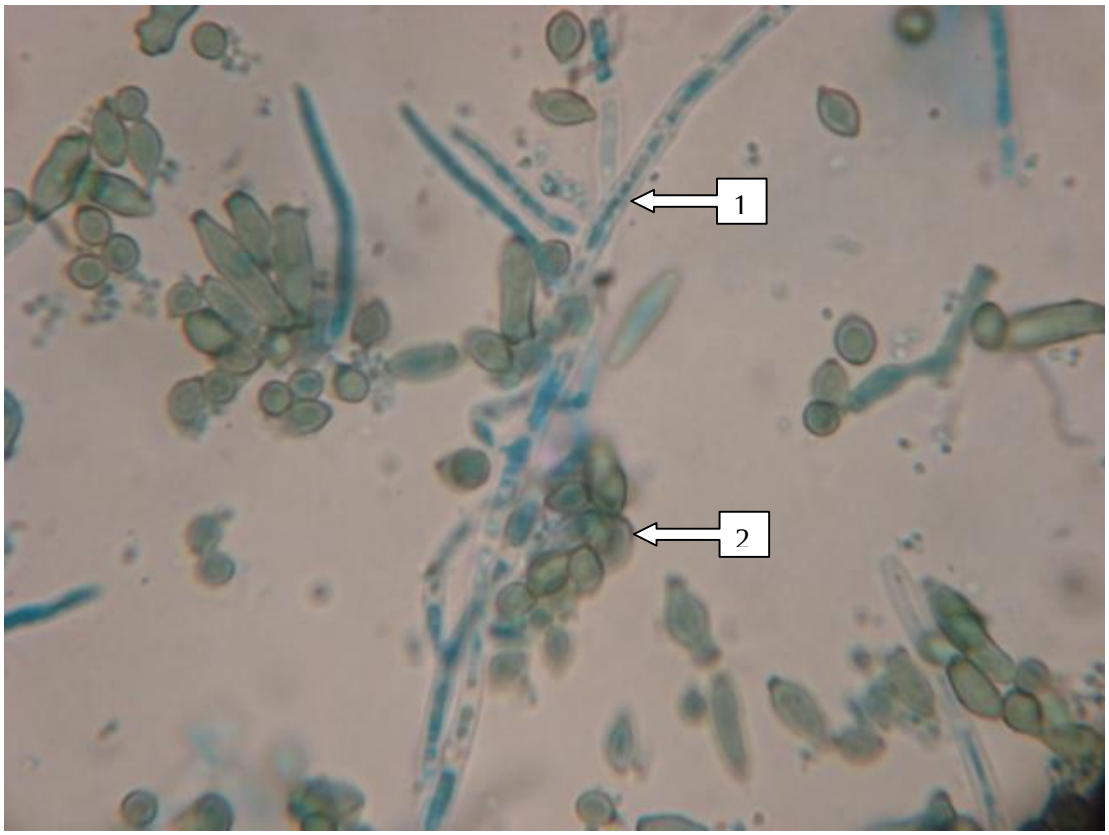

Fig. (37-b): Microscopy, hyphae(1) ; spores in clusters(2).

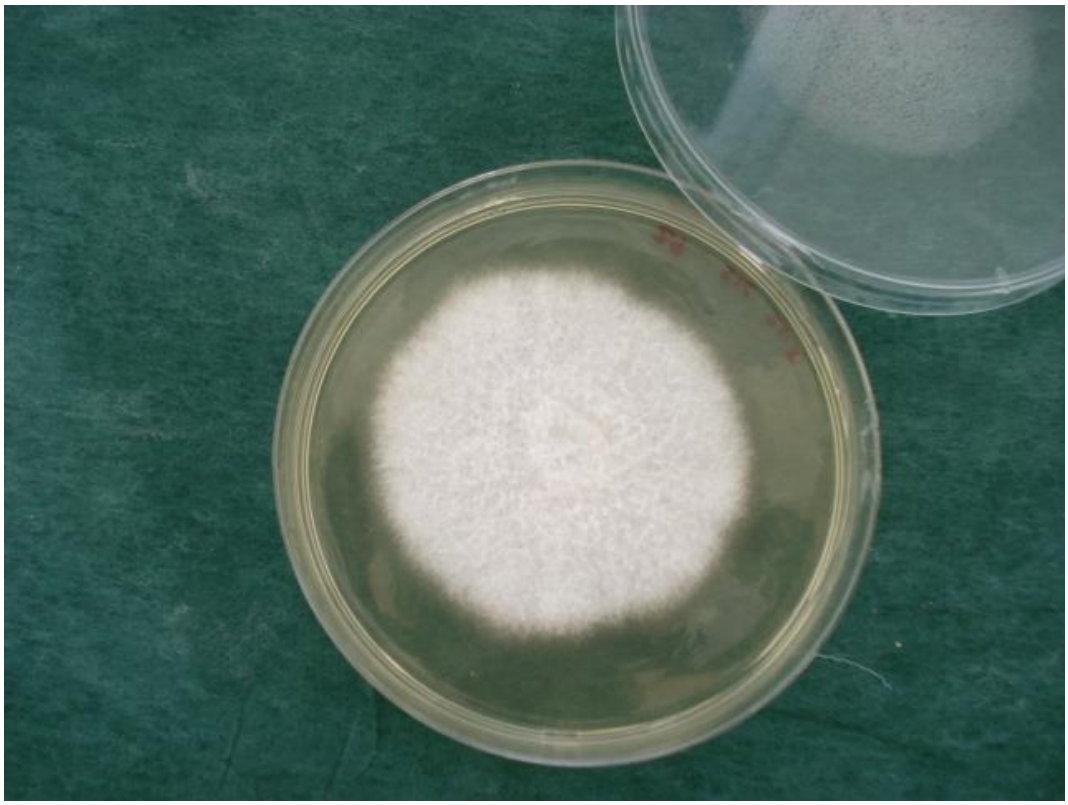

Fig. (38-a): Fusarium colony.

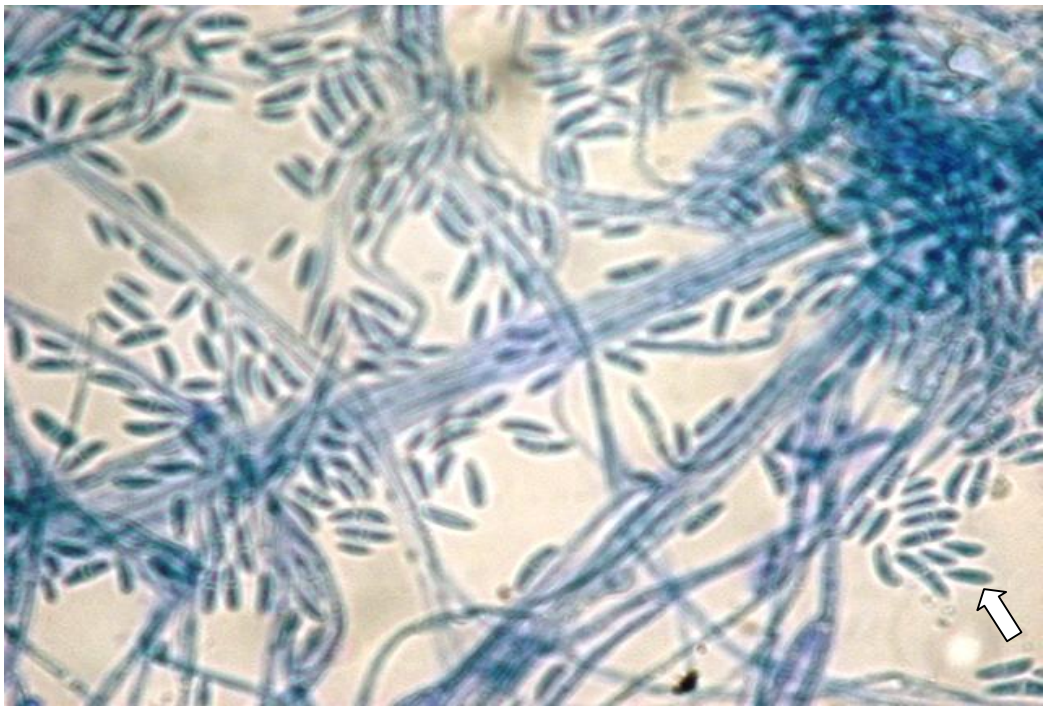

Fig.(38-b): Microscopy, curved septated macroconidia.

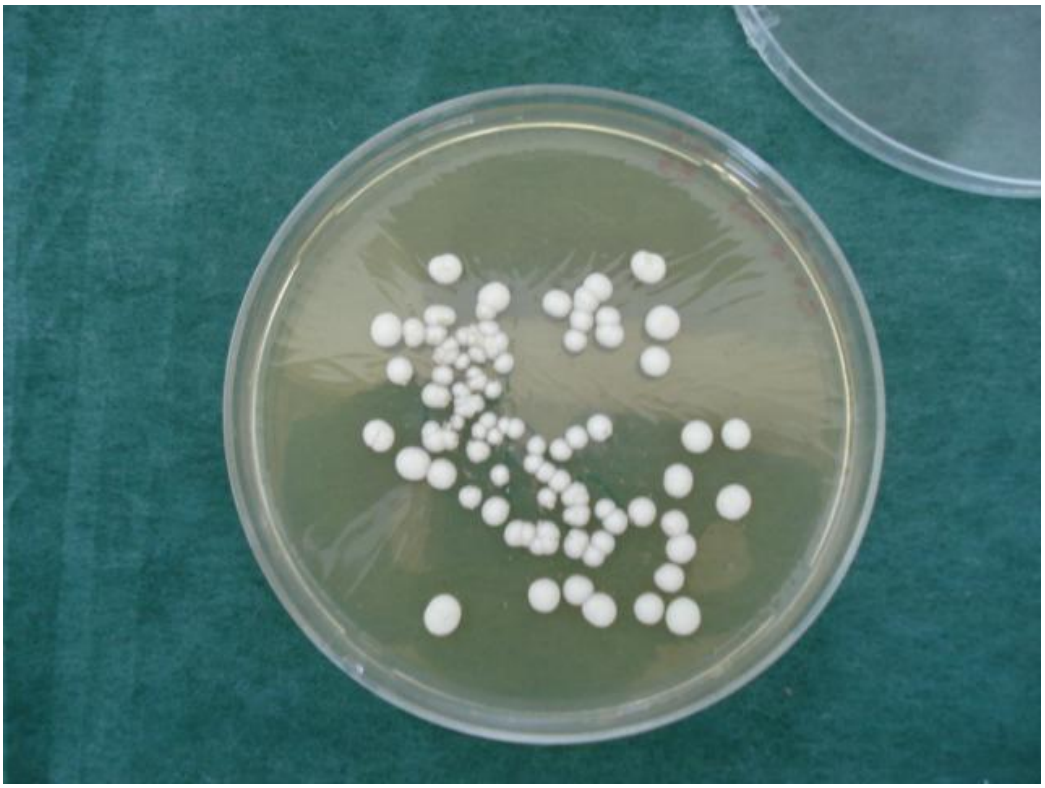

Fig. (39-a): Candida colony

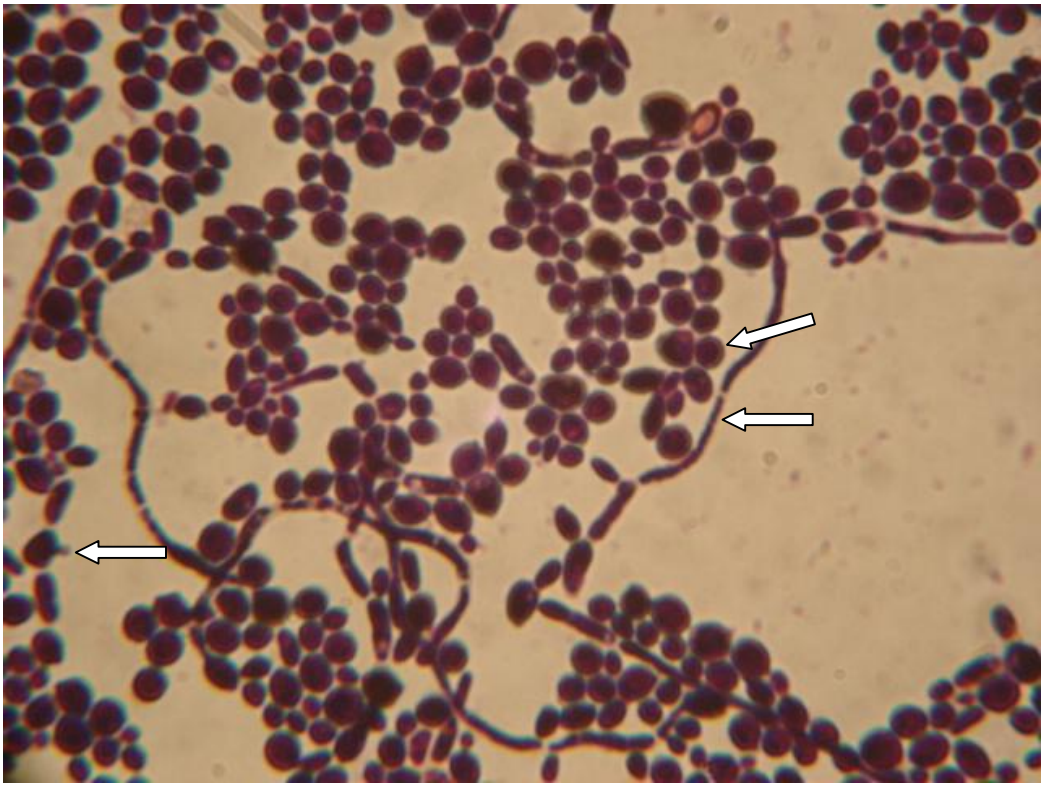

Fig. (39-b): Blastospores, budding& psudohyphae

Fig. (40-a): Trichophyton mentagrophyte colony.

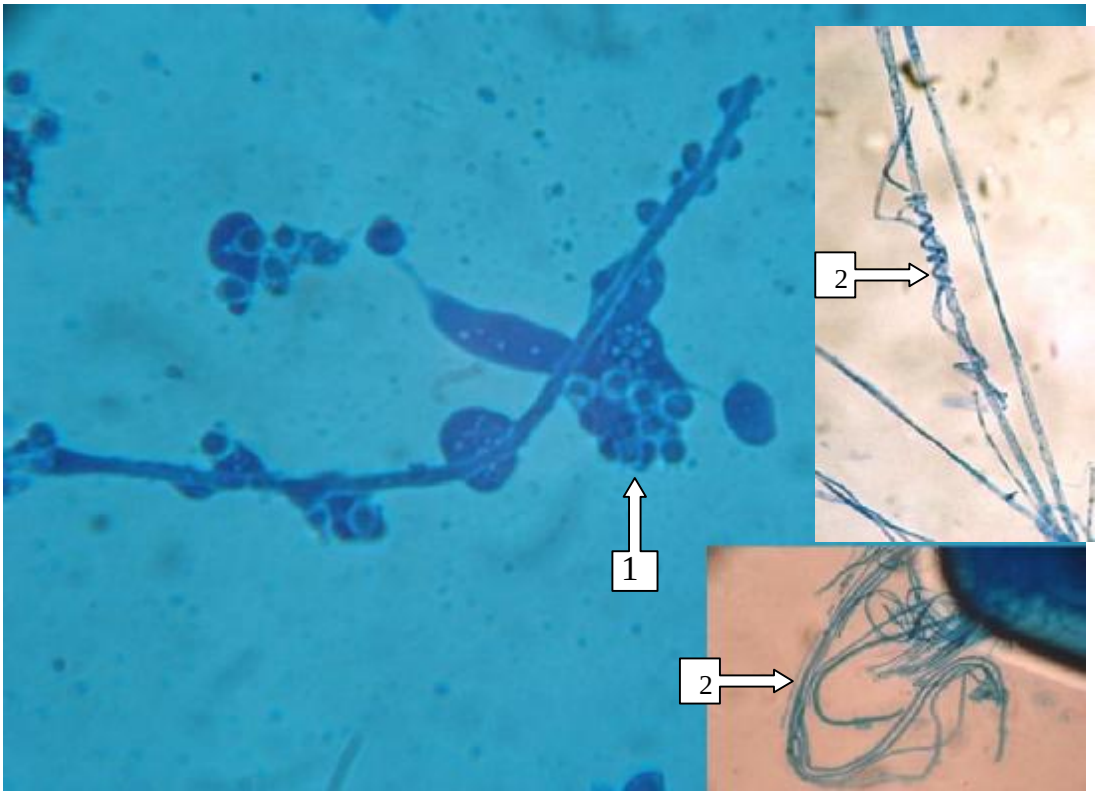

Fig. (40-b): Microscopy: Round microconidia are arranged in clusters (1) and spiral hyphae (2)

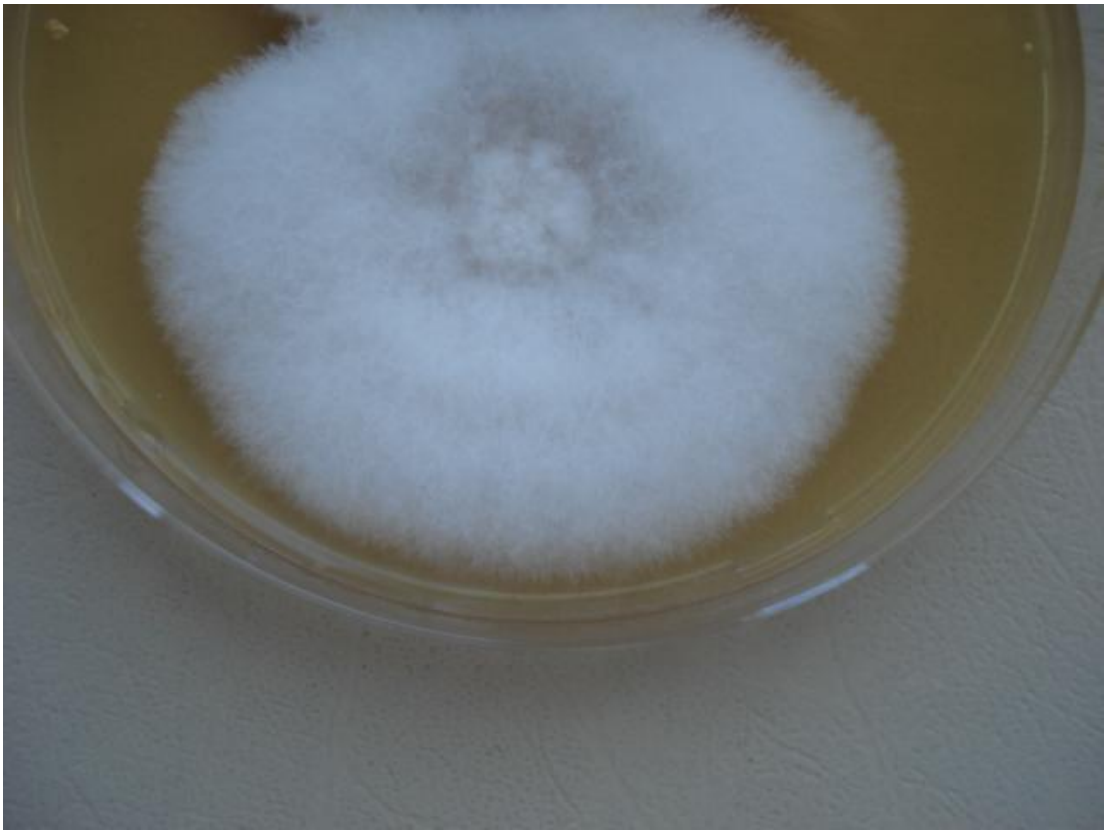

Fig. (41-a): Trichophyton Schoenleinii colony.

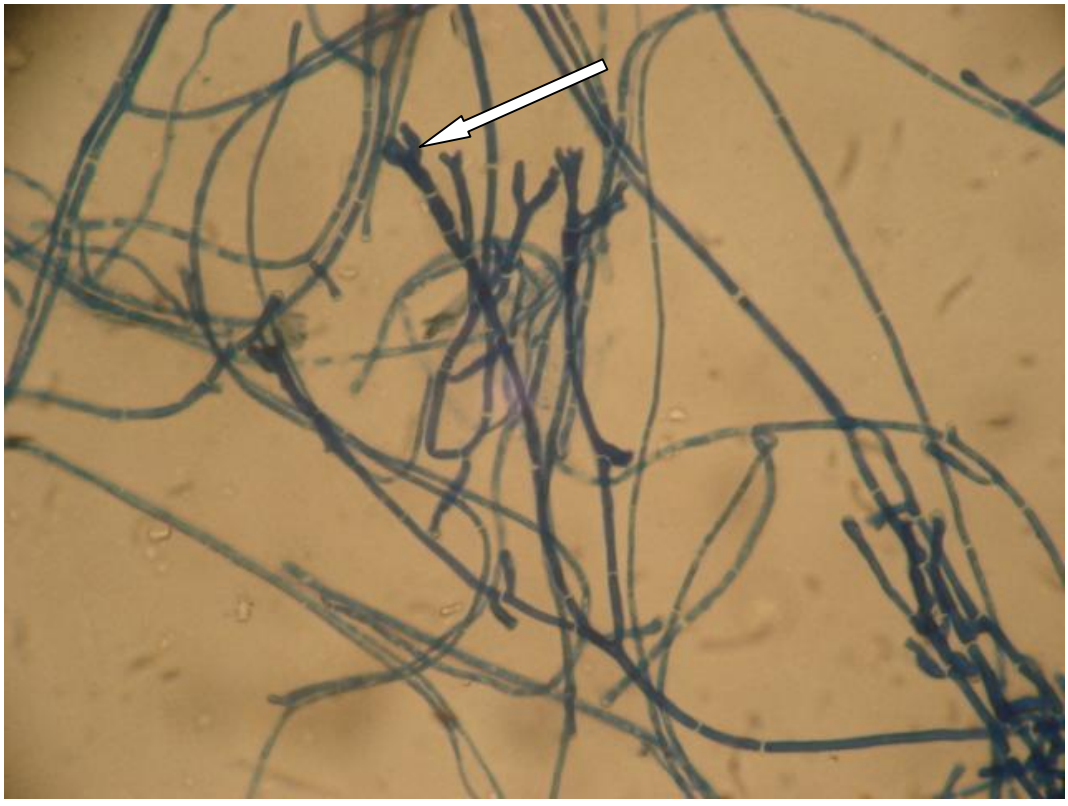

Fig. (41-b): Microscopy, typical antler hyphae.

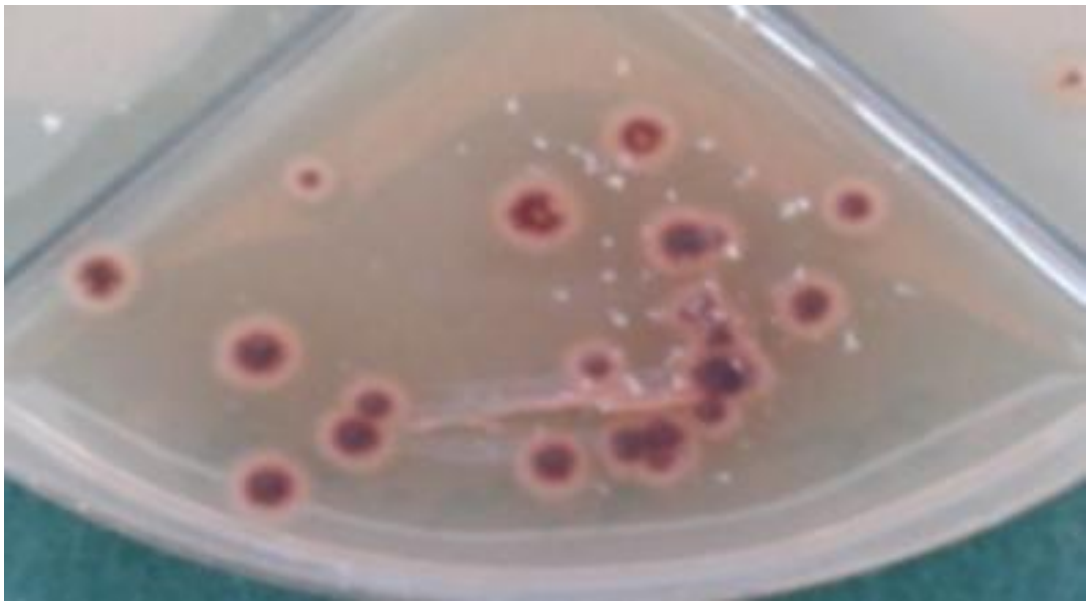

Fig. (42-a): Trichophyton violaceum colony.

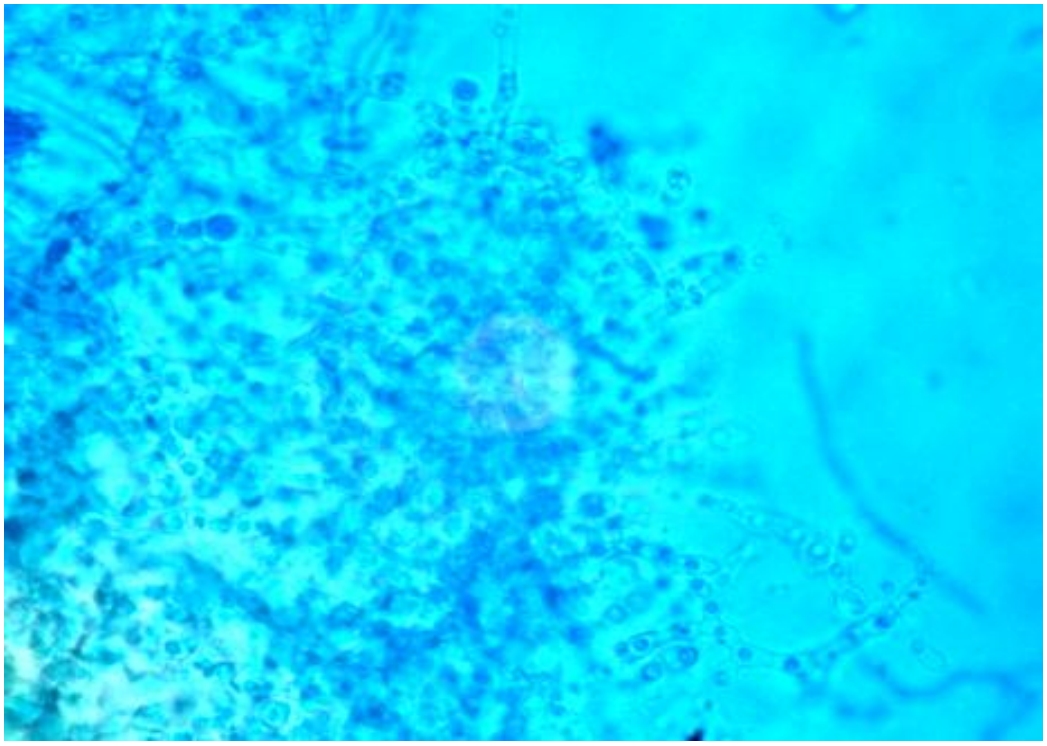

Fig. (42-b): Microscopy, irregular and bizarre segment hyphae branches.

Fig. (43-a): Trichophyton verrucosum colony

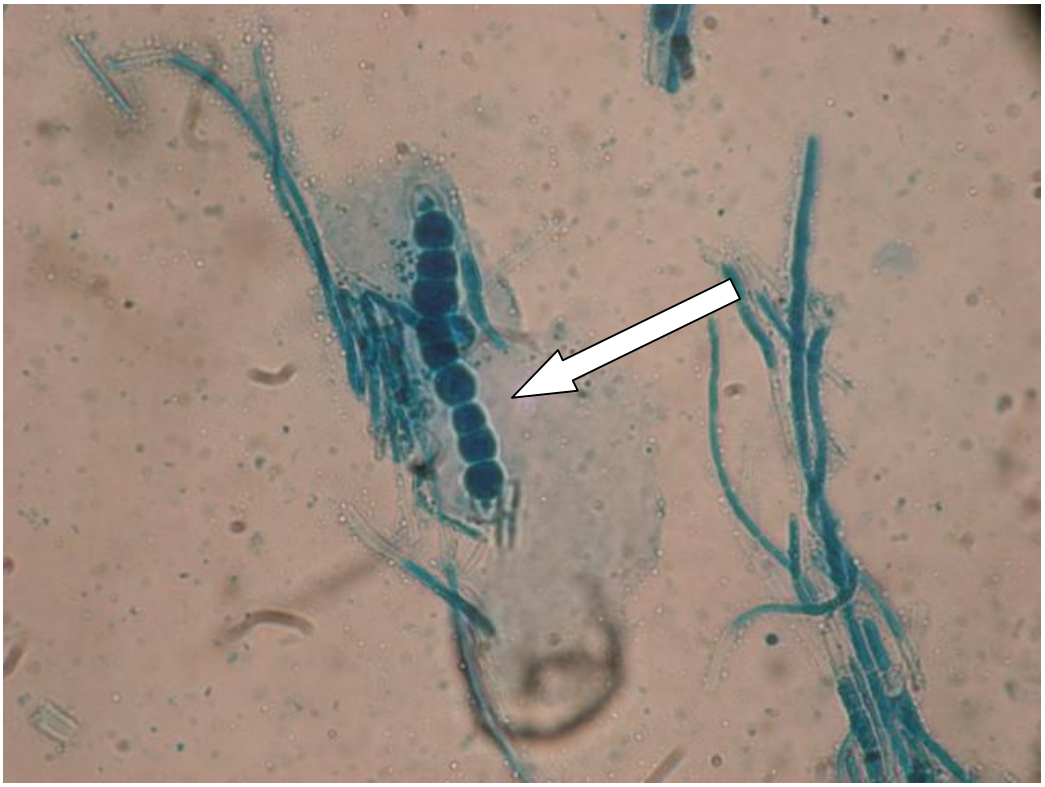

Fig. (43-b): Microscopy, Chlamydospores forming in chains.

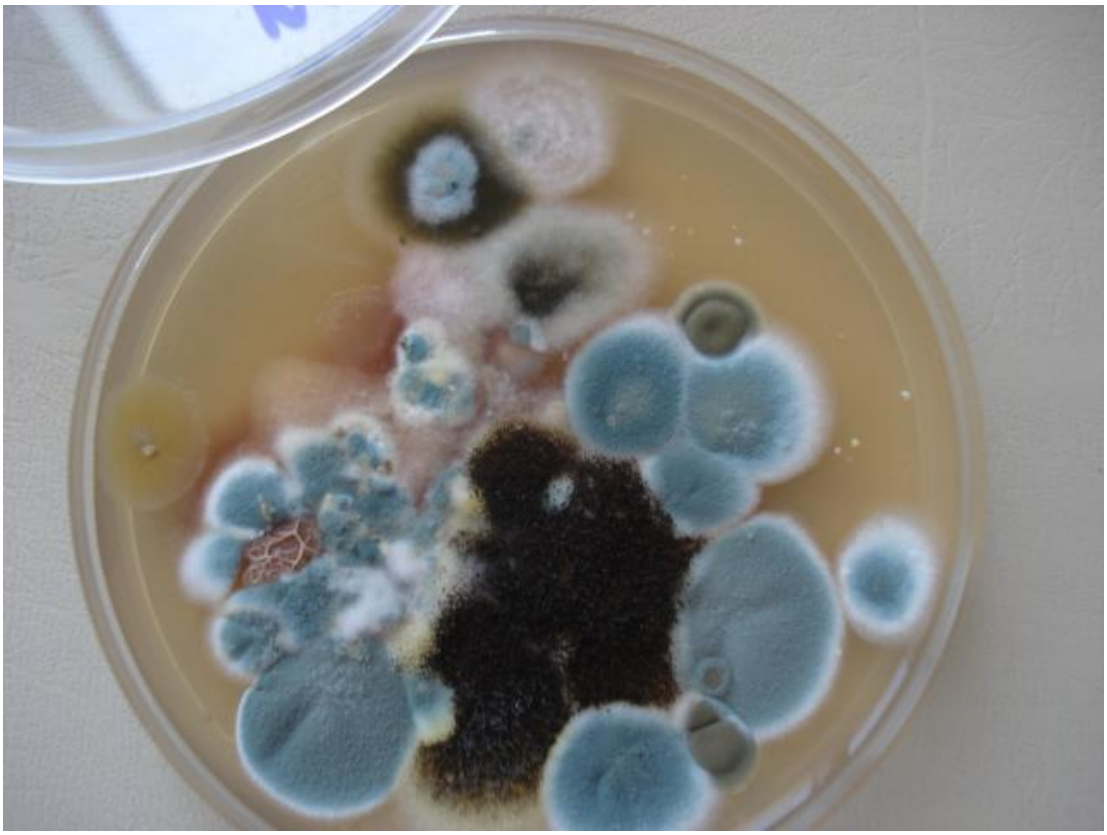

Fig. 44: Mixed fugal growth (aspergillus nigra, alternaria & pencillium&Cladosporium).

Discussion

7. Discussion

In psoriasis, nail involvement is a common finding and the manifestations may range from pitting, onycholysis, discoloration of nail plate, onychorrhexis, subungual hyperkeratosis, thickening of nail plate, leukonychia, to less commonly oil drop sign splinter hemorrhage and Beau`s line (110).

In this study psoriasis was found to be more common in males seen in (61.6%) than females in (38.4%). Puri et al (111) reported that the males (66%) more than twice the number females (34%). Other studies (112,113) found that involvement is equal in both genders. Neimann et al (114) postulated that psoriasis has bimodal peak activity. They stated that the bimodal distribution in psoriasis incidence represents two clinical presentation of psoriasis, so called type I and type II. Type I is said to occur before the age of 40 and account for 75% of all cases and results in more severe form whereas type II occurs in patients after 40 years. Our study did not show the bimodal prevalence in the distribution of psoriasis among different age groups, there was only one peak in the 30-39 years age group. In present study the average age of population affected by psoriasis in Benghazi was 44.9± 13.74 years; and most of the patients in their third decade (27.9%). It is considered relatively similar when compared with the results of Hanan et al. (1) and Natrajan et al. (115) where the average age of their patients were 41.1± 11.32 years and 48.4 years, respectively. Another study from Germany (116) reported that the average age of their patients was 57± 11.7years. However, Yaghoobi et al .(117) reported that the average age of their patients was 32± 8 years.

To the best of our knowledge, this is the first study about the relation between the severity of the psoriasis and nail involvement based on PASI score in Benghazi city. In this study, no significant difference is found between finger and toenails involvement and severity of psoriasis. In contrast , previous studies found a relationship between severity of psoriasis

and nail involvement and the frequency was highest in patients with severe disease decreasing towards moderate and milder psoriasis (118,119).

Psoriasis vulgaris was the commonest clinical type seen in our patients concordance with the previous reports (118,119). We found that hands was the commonest site involved seen in (52%) of the patients followed by feet in (45.3%) patients and periungual in (32.6%) of the patients. Other parts of the body involvement among our patients is not recorded.

Bedi (120) analyzed data of 350 psoriasis patients seen over a period of five years. Chronic plaque type psoriasis (psoriasis vulgaris) was the most common clinical phenotype. The most common sites of involvement in descending order of frequency were trunk, limbs, scalp, face, palms and soles and flexures.

Kaur et al. (121) reported that the scalp is the most common first site involvement followed by legs and arm. However, psoriasis vulgaris was the most common clinical phenotype.

According to the findings of this study, discoloration of nail plate, onycholysis, subungual hyperkeratosis and pitting are more frequent nail change seen in psoriasis in our patients. In Malaysia and Singapore, the main nail change seen was pitting, followed by onycholysis, subungual hyperkeratosis and discoloration of nail plate (122,123). In India, the pattern was onycholysis followed by discoloration of nail plate, pitting and subungual hyperkeratosis (124).

Our findings of this study, discoloration of nail plate is the most common seen in both fingernails and toenails. In Poland (125), the most common nail changes observed on both fingernails and toenails was subungual hyperkeratosis. Ghosal et al. (110) reported that pitting and subungual hyperkeratosis were the most common finger and toenails changes seen in 65% and 33% cases, respectively. On contrary our study showed that

onycholysis, subungual hyperkeratosis and pitting were observed statistically significant more in fingernails whereas in toenails the most common changes was subungual hyperkeratosis and nail plate thickening. Salomon et al.(125) reported that subungual hyperkeratosis, onychorrhexis and discoloration of nail plate were observed significant more on toenails. Natrajan et al. (115) reported that onycholysis is about (38.3%) and subungual hyperkeratosis (30.8%) both were seen more in toenails. Other less frequent nail changes were nail dystrophy, paronychia, onychomediasis, leukonychia, oil drop, in fingernails and Beau`s line seen in both finger and toenails, although these findings were with a comparatively lower frequency as compare to other nail changes, they are in agreement with previous studies (126,127). Our findings showed that fingernails were affected with highest frequency followed by both finger and toenails involvement while toenails involved alone were the least common site affected. This observation corresponds with Langley et al. (127) who reported that fingernails affected more commonly than toenails, and by Ghosal et al. (110) who claimed a higher frequency of fingernails psoriasis as compared to toenails. Natarajan at al. 2010 (115) showed that nail changes were significantly more common in males, on other hands, in our findings there was no statistically significant difference between genders according to nail changes.

Joints involvement have been reported to affect about 30% of psoriatic patients (128). A pervious study in Pakistan population had shown about 10% overall incidence of joint involvement (129). Williamson et al. (130) have pointed out that severity of the nail disease in association with psoriatic arthropathy has never been emphasized. According to the findings of this study, arthralgia (joint pain) was seen in (29.1%) patients and arthritis in (3.5%) patients. Moreover , we could not elicit any relationship of joint involvement with the nail involvement among our patients. One reason could be that our data was based on history and clinical examination, without radiological examination. The other studies

mentioned were focused only on psoriatic joint disease and more stringent inclusion criteria were employed.

Onychomycosis traditionally referred to as a non- dermatophytic infection of nails, but is now used as general term to denote any fungal nail infection. The term tinea unguium is used especially to describe invasion of nail plate by species of dermatophytes (10). In the present study, all 86 psoriatic patients with nail changes were underwent for mycological examination. In this study, 42.6% showed both positive KOH direct microscopic and mycological culture, and 70.9% showed positive culture for fungi and in 29.1% there was no growth. Direct microscopy using KOH preparation plays an important role in diagnosing nail fungal infections. However, fungal culture is the only definitive test that can be used to identify the species of infectious organism (131). Unfortunately, direct microscopy examination is often negative in nails that appear to be infected clinically. Moreover, cases may yield positive direct microscopic examination in spite of negative culture, which was seen in 32% of the patients under study. This could be explained by that those patients may receive incomplete, interrupted, improper course of antifungal so that fungi seen on KOH examination may not be viable by the time are inoculated in vitro and hence do not grow as expected (131). furthermore, sampling the nail beyond the distal tip may not yield positive culture because the infection advances proximally and the fungal elements at the distal end of the nail are less likely to be viable. The subungual drilling technique gave better results than curettage because this electric device allows obtaining more material in more rapid and less discomforting way, and drill samples are in powdery form that is easy to culture (shemer et al. (132)). Furthermore, cases may yield positive culture in spite of negative direct microscopy using KOH, as it is seen in 57.4% of our cases, which could be explained by absence of hyphae from the specimen collected for microscopic examination. In that case the fungus might have been in active sporulating

phase that is difficult to be detected by KOH, but it can grow when cultured on the appropriate medium (133). Certain studies stated that the polymerase chain reaction (134) and histopathologic examination with periodic- Schiff stain (135) may be more sensitive methods for detection and identification of onychomycosis than conventional methods, and have considerable diagnostic value.

The dermatological literature on the relationship between psoriasis and onychomycosis is ambiguous (6). Certain authors found that there is no difference in the incidence of onychomycosis between psoriatic patients and normal population (Hamneriua et al. (136) Staberg et al (137)). In our study, the prevalence of onychomycosis among our psoriatic patients was high (70.9%). Our findings are closed to the results previous studies which reported the prevalence of onychomycosis among their patient ranged from 56%-70% (8,138). This explanation is that the abnormal capillary unit in psoriatic nails imparies the defense normally supplied by healthy hpyponychium, predisposing the nail to fungal infection. Salomon et al. 2003 (6) isolated non-dermatophytic moulds in (37%) of the patients as the commonest aetiological agent of onychomycosis in psoriatic patients. Natarajan et al 2010 (115) reported non-dermatophytic infection seen in (18.75%) of psoriatic patients. In this study, the most commonly isolated fungi were non-dermatophytic moulds. They have been cultured in (52.5%) of psoriatic patients, which considered to be higher when compared with the results of Salmon etal. (6) and Natarajan et al. (115). This variation may reflect geographic differences in mould distribution. The role of non-dermatophyte moulds remains controversial. Traditionally they have been regarded as secondary pathogens of nails which are already diseased, although they may act as primary pathogens in a small number of cases. Non- dermatophyte moulds which are regularly identified in onychomycosis include Alternaria species, Pencillium species, Sytalidium species, Acremonium species, Scopulariopsis species, Cladosporium species, Fusarium

species and Aspergillus species (139). In this study the most frequent isolated of non-dermatophyte moulds were Mucor species, Altenaria species and Penicillium species, this is in agreement with previous studies (6); other non-dermatophytic strain were isolated Aspergillus species, Aspergillus nigra Fusarium species, Clamdosporum species and Scopulariopsis species. It is considered relatively similar when compared with previous studies (115,131). William (140) stated that non-dermatophytes could account for 1.5%-6% of all onychomycosis. of cases.

The organisms responsible for most Candidal include Candida albicans, Candida parapsilosis and Candida guilliermondii (141). Candida albicans is a member of normal flora of alimentary tract, it is not a normal inhabitant of the intact skin, and when it occurs in nail disease, it is assumed to be of pathogenic significance (142). Our study showed that Candida was responsible for 26.2% of all cases. This may be similar when compared with work Salomon et al. (6) who isolated yeasts in 31.5% of their psoriatic patients, but it is high in comparison with the Hanan et al. (1). Furthermore, There was no significant difference between females and males having yeast in their nails among psoriatic patients in this study these result is similar to those results reported by Larsen etal.(11). Dermatophytes are hyaline septated moulds. The hyphae of these mycelial organisms penetrate the stratum corneum of skin and nails. The fungal cells manufacture keratinolytic protease, which provide a means of entry into living cells (10).Our findings among dermatophytes were isolated in 8.2% patients, Trichophyton mentagrophytes was the commonest pathogen among dermatophytes in our psoriatic patients, followed by Trichophyton Schoenleinii, Trichophytone verrucosum and Trichophyton violaceum in of patient for each.

This finding is not agreement with Zisova et al 2011 (138) who reported that dermatophytes responsible for 67% of all their cases; Trichophyton rubrum was the

commonest pathogen, followed by Trichophyton mentagrophytes and Trichophyton verrucosum. Kacar et al. (12) reported that the Trichophyton rubrum is the commonest pathogen among dermatophytes in patients with psoriasis. However , we did not isolated of it.

Previously it was believed that serum-like glycoprotein into nail which is inhibitory to dermatophytes, but with no effect on yeasts. Furthermore, it was believed that the fast turnover of the nails in psoriasis patients may constitute an effective defense against dermatophytes. But we can conclude that the more rapid growth of psoriatic nails does not protect nails from dermatophytes contrary to previous belief. In some studies, the culture may show mixed growth including dermatophyte, non-dermatophyte mould, yeast and bacteria. It was shown that nails may already be dystrophic when colonized saprophytically by fungi (143). In our study, 13.1% of cases have mixed fungal growth in culture more than one species of non-dermatophyte mould. Although the presence of a dermatophyte on direct microscopy or culture has long been accepted as evidence that it is the pathogen for onychomycosis, even in mixed infections (144). Weitzman and Summerbell (145) supported the view that dermatophytic fungi are still the main aetiological agents of onychomycosis and stressed that the growth of non-dermatophyte on culture following a positive results on direct microscopic is not sufficient to diagnosis non dermatophyte infection.

Conclusions

8. Conclusions

. Psoriasis is a widespread skin disorder in which nail involvement is a common symptoms.

. Psoriasis was predominately seen in males with high frequently among youngest age group.

. Many psoriatic patients have nail changes morphologically resembling onychomycosis.

. Discoloration of nail plate, onycholysis, subungual hyperkeratosis and pitting were the most frequently nail changes in psoriasis.

. The common pathogenic organisms were non-dermatophyte moulds, Followed by Candida and dermatophytes.

Recommendations

9. Recommendations

. Because of similar clinical presentation of nail psoriasis and onychomycosis, mycological examination should be done to investigate the possibility of fungal infection, in particular before the application of topical steroid.

. It is importment to remember that oral terbinafine may induce de novo development of psoriatic lesions or exacerbate preexisting psoriasis, therefore, it should be avoided in psoriatic individuals.

. Early diagnosis and early treatment of the disease is through improvement in heath services at the hospital by providing fully equipped mycology laboratory with advanced diagnostic techniques at all departments of dermatology.

. Training courses in new diagnostic techniques (histomycology combining with histological examination) is recommended to all postgraduates, dermatologist, and laboratory technicians to improve the health services in this field.

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Appendixes

Appendix- I

PASI calculation and body diagram

Complete this section if your patient has severe chronic plaque psoriasis of the whole body

Patient details

First Name

Family Name

Dermatologist details

Dermatologist's name

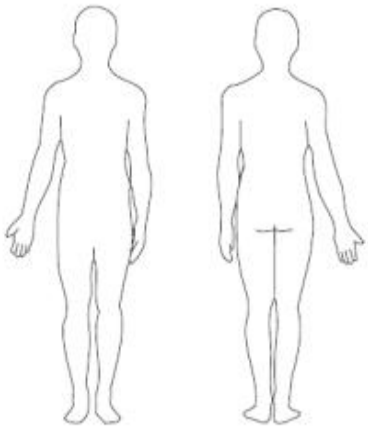
Date of assessment / /

Dermatologist's signature

A Psoriasis Area and Severity Index (PASI) is a quantitative rating scale for measuring the severity of psoriatic lesions based on area coverage and plaque appearance. Please complete **all** sections of the table and shade in the affected areas on the body diagrams below.

Plaque characteristic	Rating score	Body region (and weighting factor)			
		Head	Upper Limbs	Trunk	Lower Limbs
Erythema	0 = None 1 = Slight 2 = Moderate 3 = Severe 4 = Very severe				
Thickness					
Scaling					
Add together each of the 3 scores for each of the body regions to give 4 separate sub totals.					
Sub Totals		A1=	A2=	A3=	A4=
Multiply each sub total by amount of body surface area represented by that region i.e. A1 x 0.1 for head, A2 x 0.2 for upper limbs, A3 x 0.3 for trunk, A4 x 0.4 for lower limbs to give a value B1, B2, B3 and B4 for each body region respectively					
		A1 x 0.1 = B1	A2 x 0.2 = B2	A3 x 0.3 = B3	A4 x 0.4 = B4
		B1=	B2=	B3=	B4=
Degree of involvement as % for each body region affected (score each region with score between 0–6)	0 = None 1 = 1–9% 2 = 10–29% 3 = 30–49% 4 = 50–69% 5 = 70–89% 6 = 90–100%				
For each body region multiply sub total B1, B2, B3 and B4 by the score (0–6) of the % of body region involved to give 4 subtotals C1, C2, C3 and C4					
		B1 x score = C1	B2 x score = C2	B3 x score = C3	B4 x score = C4
		C1=	C2=	C3=	C4=
The patient's PASI score is the sum of C1+C2+C3+C4				**PASI=**	

Please shade in the affected areas



Appendix- II

- Prevalence of fungal nail infection among psoriatic patients

- Name of patient
  phone: S.N.
- Age
- Sex
- Duration of illness ( )
- Clinical type of psoriasis ( )
- joint involvement : arthralgia (joint pain) arthritis (swelling & restricted movement)
- (site of involvement : hands ( ) feet ( ) periungual ( )
- Finger nails examination :
- (1) Pitting ( )
- (2) onycholysis ( )
- (3) discoloration of nail plate ( )
- (4) subungaul hyperkeratosis ( )
- (5) onychorrexis ( )
- (6) nail plate thickening ( )
- (7) oil drop ( )
- (8) others ( )
- Toe nails examination
- 1) pitting ( )
- (2) onycholysis ( )
- (3) discoloration of nail plate ( )
- (4) subungaul hyperkeratosis ( )
- (5) onychorrexis ( )
- (6) nail plate thickening ( )
- (7) oil drop ( )
- (8) others ( )

Appendix- III

- Laboratory finding
- KOH examination
- Finger nails Positive ( ) negative ( )
- Toe nails positive ( ) negative ( )
- Culture growth ( ) no growth ( )

Macroscopic:

- Color ( ) surface ( ) reverse ( )
- Texture: smooth ( ) downy ( ) suede ( )
- granular ( )
- Microscopic: hyphae: septate ( ) non septate ( ) pigmented ( ) non pigmented ( )
- Conidia: Microconidia ( ) tear drop ( ) grapelike ( )
- Macroconidia : Cylindrical ( ) Club ( ) Spindle ( ) Smooth wall ( )
- Rough wall ( )
- Species

Gram stain : Pseudo-hyphae ( ) blastospores ( )

Appendix -IV

Media and Reagents

A- sabouraud`s dextrose agar

Mycological peptone	10.0 gm
Dextrose	10.0 gm
Agar NO 1	15.0 gm
Distilled water	1 liter

B- Potassium hydroxide (for KOH mounts)

(20% KOH)

Potassium hydroxide	20.0 gm
Distilled water	100.0 ml

Storage : Room temperature
Shelf life: Six months

C- Lactophenol cotton blue mounting media

Phenol	10.00 g
Lactic acid	10 ml
Glycerol	20 ml
Cotton blue (aniline blue), water soluble	0.04 g
Distilled water	10 ml

Storage : cool dark place
Shelf life: several months

D- Gram stain

Crystal violet stain
Lugol`s iodine
Aceton-alcohal decolorizer
Safranin

Appendix -V

Macroscopic feature of fungal colonies

Growth rate at 25^0C-30^0C

Color (surface, reverse agar)

Topography

Flat

Raised

Heaped

Texture

Smooth

Downy

Granular

Suede

Velvety

Patterns of colony folding

Cerebriform

Crateriform

Plicated

Miscellaneous features

Radial grooves

Scalloped margins

Diffusible pigments

Crack in agar

Arabic summary

الملخص

المقدمة: الفطريات والصدفية هي أمراض شائعة وترتفع احتمالية أن يصاب بهما الإنسان في الوقت نفسه. يوجد العديد من التشوهات في أظافر المصابين بالصدفية مثل وجود الحفر، وتلون الأظافر، وتحللها، وازدياد النسيج تحت الظفر وقطرة الزيت التي يصعب تفريقها سريرا عن فطريات الأظافر، إلا أنّ التشخيص يعتمد على الفحص الفطري.

الغرض من الدراسة : تحديد معدل الإصابة بالعدوى الفطرية لدى مرضى الصدفية.

المرضى والطرق : هذه الدراسة القطاعية تم اختيار المرضى المشاركين فيها من عيادة الصدفية (مرة واحدة أسبوعيا) ومن مرضى قسم الجلدية في مستشفى الجمهورية بمدينة بنغازي – ليبيا خلال مدة عام واحد امتدت من مايو 2011 حتى إبريل 2012. تم اختيار 86 من المرضى مصابين بأنواع مختلفة من الصدفية وبأعمار مختلفة من كلا الجنسين للفحص السريري باستخدام نموذج معين متوافق مع نوع الصدفية المصاب بها المريض، مدة المرض، وتاريخ إصابة المفاصل. وخضع كل مريض إلى استقصاء تاريخ مرضي موضوعي وفحص طبي دقيق شاملا لكل الأظافر. وقد خضع 86 مريض مصاب بتغيرات الأظافر للفحوص الفطرية. وتم تقييم حدة الإصابة بحسب مؤشر حدة إصابة المنطقة بالصدفية (PASI)، وتباعا لذلك تم تقسيم المرضى إلى ثلاث مجموعات بحسب درجة الإصابة. بسيطة أقل من 3، متوسطة (3 – 10)، حادة أكثر من 10. حيث تم أخذ العينات للفحص الفطري من الأظافر متضمنة الفحص المجهري المباشر باستخدام هيدروكسيد البوتاسيوم (KOH) 20% وزرعها على غراء سابورود دكستروز وغراء فنغوبايوتك " مثبت لنمو الفطريات " يحتوي على سايكلوهيكسامايد والكلورمفينكول. تم تحليل البيانات باستخدام حزم إحصائية خاصة بالعلوم الاجتماعية (SPSS) النسخة رقم 18. تم استخدام الإحصائيات الاستنتاجية، مثل اختبار كاي سكوير والمعامل المهم P بقيمة ≤ 0.05، تم إنجاز الجداول والإحصائيات باستخدام برنامج مايكروسوفت إكسل 2007.

النتائج : 86 مريض صدفية، 53 (61.6%) ذكور و 33 (38.4%) إناث، معدل الذكور إلى الإناث 1.6 : 1. متوسط أعمار المرضى 44.9 ± 13.74 سنة. أكثر نوع شيوعا للمرض كان الصدفية الشائعة (93%). كان مؤشر حدة إصابة المنطقة بالصدفية يتراوح ما بين: حالة إصابة بسيطة 27 مريض (31.8%)، حالة إصابة متوسطة 35 مريض (41.2%)، حالة إصابة حادة 23 مريض (27%). لم يكن هنالك أي أهمية إحصائية ما بين إصابة الأظافر و مؤشر حدة إصابة المنطقة بالصدفية. وأوضح كشف الأظافر أن تغيير لون الظفر، وتحلله، وتبقعه، وازدياد النسيج تحت الظفر هي تغيرات شائعة لدى المرضى المصابين بالصدفية. كان هنالك مؤشر أهمية في تبقع الأظافر (P = 0.0001)، تحلل الأظافر (P = 0.0001)، وازدياد النسيج تحت الظفر (P = 0.047)، والذي كان أكثر

شيوعا في أظافر اليدين عنه في أظافر القدمين. تأثر المفاصل الذي يتمثل في صورة ألم المفاصل (أرثالجيا) لوحظ في 25 مريض (29.1%)، وتورم ومحدودية الحركة (التهاب المفاصل) في 3 مرضى (3.5%). كل مرضى الصدفية والذين بلغ عددهم في هذه الدراسة 86 مريض أجري لهم فحص فطري للأظافر. فحص مجهري مباشر باستخدام هيدروكسيد البوتاسيوم (KOH) كان إيجابيا لدى 34 من المرضى (39.5%). وكان الفطر المعزول والأكثر شيوعا هو العفن الغير متعايش على الجلد بواقع 32 حالة (52.5%)، ويأتي في المرتبة الثانية الفطريات البيضاء (كانديدا) 16 (26.2%)، والمتعايشات على الجلد 5 (8.2%).

الخلاصة: أن تغيير لون الظفر، وتحلله، وتبقعه، وازدياد النسيج تحت الظفر هي أكثر التغيرات شيوعا لدى المرضى المصابين بالصدفية. ويعتبر الكشف الفطري لكل مرضى الصدفية المصابين بتغيرات في الأظافر إلزاميا نظرا للأعداد الكبيرة من مرضى الصدفية المشخصين بالإصابة الفطرية للأظافر.