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Review Article

A Review on: Mycosis Fungoides

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Malignant T-cell clones infiltrate the skin in mycosis fungoides (MF), the most prevalent form of cutaneous lymphoma. About 60% of cases of cutaneous T-cell lymphoma are diagnosed with it. MF typically manifests on the buttocks, trunk, and breast and has three distinct clinical stages: patch, plaque, and tumour. The appearance frequently resembles common inflammatory dermatoses including psoriasis and eczema. The aetiology of MF is still mostly unknown despite a number of ideas. Diagnosis has remained difficult since its initial description in 1806 and necessitates meticulous clinicopathological correlation. In order to detect the distinctive epidermotropic infiltrates of small-tomedium-sized lymphocytes, patients may need several skin samples, particularly during the patch stage. Skin-directed treatments including topical corticosteroids and phototherapy are part of first-line care. Systemic drugs such interferon-α, oral bexarotene, methotrexate, and new antibody treatments are tested if they don't work. Additionally, MF can react to complete skin electron beam therapy, localised radiation, and haematopoietic stem cell transplantation. MF can spread to other organs even though it is mainly a cutaneous lymphoma. The epidemiology, clinical characteristics, diagnosis, and treatment of MF are all well covered in this article.

Keywords: Anti-fungal ,dermatophyte,Superficial mycoses.

INTRODUCTION

A classic form of cutaneous T-cell lymphoma (CTCL), mycosis fungoides (MF) is an uncommon cutaneous cancer. With 60% of CTCL cases in Europe, it is the most common subtype. [1] Two types of cutaneous mycoses are dermatophytosis and dermatomycoses. Dermatophytosis is caused by agents from the genera Epidermophyton spp., Microsporum spp., and Trichophyton spp. Dermatomycoses, on the other hand, are skin illnesses brought on by different fungi, most frequently Candida species. [2] Implantation mycoses and invasive fungal infections can result in substantial morbidity and mortality, whereas superficial fungal infections are easily treated [1,2]. Numerous illnesses in humans are brought on by fungal infections or mycoses. The severity of mycoses varies, ranging from superficial infections affecting the skin's stratum corneum to widespread infections affecting the brain, heart, lungs, liver, spleen, and kidneys. [3] Mycoses, another name for fungal diseases, can be categorised into classes according to how invasive they are. Cutaneous mycoses are mycoses that result in superficial infections of the skin, hair, and nails. Mycoses that infect deeper tissues by penetrating the dermis and epidermis are referred to as subcutaneous mycoses. Systemic mycoses are mycoses that spread throughout the body. [4]

HISTORY

Alibert gave the illness the term mycosis fungoides (MF) in 1829, which translates to "mushroom-like fungal disease." More than a century later, from 1938 until 1949, French dermatologist Albert Lézary published papers describing cutaneous "monster cells" and a strange ailment that caused erythroderma and "cellules monstrueuses." French dermatologist Jean-Louis-Marc Alibert initially reported mycosis fungoides in 1806. [40] The term "mushroom-like fungal disease" (mycosis fungoides) is highly

misleading. However, the illness is a kind of non-Hodgkin's lymphoma rather than a fungal infection. Alibert described the skin tumours of a severe case as resembling mushrooms, which is how it got its name. [42] Due to the disease's visual resemblance to the treponemal disease Yaws, also called Pian, Alibert named it Pian fungicides in 1814. [26]

Types of Mycosis

1) Superficial fungal infections

- Ringworm(dermatophytosis)
- Onychomycosis
- Candidiasis
- Tinea versicolor

2) Subcutaneous fungal infections

- Sporotrichosis
- Chromoblastomycosis
- Eumycetoma

3) Deep fungal infections

- Histoplasmosis
- Coccidioidomycosis
- Blastomycosis
- Aspergillosis
- Candidal urinary tract infection
- Invasive candidiasis
- Pneumocystis pneumonia
- Mucormycosis
- Cryptococcosis

1. **Superficial fungal infections: -**Fungal infections on the surface Your skin, nails, and mucous membranes (such as your mouth, throat, or vagina) are all affected by superficial fungal infections. Superficial fungal infections include, for instance:

- **Ringworm (dermatophytosis): -**Ringworm is caused by a class of fungi called dermatophytes that feed on skin, hair, and nail cells. They can infect your hands (tinea manuum), scalp (tinea capitis), feet (tinea pedis/athlete's foot), groin and inner thighs (tinea cruris/jock itch), facial hair and surrounding skin (tinea barbae), and other body parts (tinea corporis).

- **Onychomycosis.** Your fingernails or toenails can become infected with a variety of fungi (onychomycosis). This may result in broken and discoloured nails.

- **candidiasis.** Infections of the skin and mucous membranes (mucocutaneous) caused by Candida (typically Candida albicans) are known as candidiasis. These include candidal intertrigo, esophageal candidiasis, vaginal yeast infections (vulvovaginitis), oral thrush, and certain kinds of nappy rash.

- **Pityriasis versicolour and tinea versicolour: -** Tinea versicolour, also known as pityriasis versicolour, is a skin discolouration caused by the fungus Malassezia. Fungal infections under the skin If fungus enters a cut or wound, usually from an injury sustained when dealing with plants (such as a thorn scratch), you may get a subcutaneous fungal infection. They result in skin problems such as rashes and ulcers.

2. **Subcutaneous fungal infection: -**Tropical and subtropical regions of the world have higher rates of subcutaneous fungal infections. Examples consist of:

- **Sporotrichosis (rose gardener's disease).** Sporothrix fungus causes sporotrichosis. You can also get sporotrichosis in your lungs or other parts of your body.

- **Chromoblastomycosis.** Many different fungi can cause chromoblastomycosis. It can cause a long-lasting (chronic) skin infections. Rarely, it spreads to other parts of your body.

- **Eumycetoma.** Many different fungi can cause eumycetoma. Your feet are most frequently affected.

3. **Deep fungal infections: -**Other than the skin, deep fungal infections can occur in the lungs, blood, urinary system, or brain. Certain diseases are opportunistic, which means they often only infect those with compromised immune systems. Invasive or deep fungal diseases consist of:

- **Histoplasmosis.** The fungus that causes histoplasmosis, Histoplasma, can infect your brain, lungs, or other bodily regions. It is frequently seen in the lowlands of the Mississippi and Ohio rivers.

- **Coccidioidomycosis:** - Coccidioidomycosis, which is caused by the fungus Coccidioides, can infect your lungs and, in rare cases, spread to other parts of your body. Arizona and California are where it is most prevalent. blastomycosis. The fungus that causes blastomycosis, Blastomyces, frequently infects your skin, lungs, and bones. In rare cases, it can also infect your spinal cord and brain.

- **Aspergillosis:** -Allergic bronchopulmonary aspergillosis (ABPA) and chronic pulmonary aspergillosis are two of the lung illnesses that can be brought on by Aspergillus, the mould that causes aspergillosis. It can also develop into a fungus ball (aspergilloma) or infect other parts of your body.

- **Candidal infection of the urinary tract.** The majority of urinary tract infections (UTIs) are caused by bacteria, but others, like Candida, are brought on by yeast. invasive candidiasis. Invasive candidiasis is caused by a variety of Candida species. Your heart, blood (candidemia), brain, eyes (endophthalmitis), bones, and other bodily components may get infected.

- **Pneumocystis pneumonia:** -The fungus Pneumocystis jirovecii can infect your lungs and cause Pneumocystis jirovecii pneumonia (PJP).

- **Mucormycosis.** Mucormycosis is caused by a class of moulds known as mucormycetes. Mucormycetes can cause brain and sinus infections. (rhinocerebral mucormycosis), skin (cutaneous mucormycosis), intestines (gastrointestinal mucormycosis), lungs (pulmonary mucormycosis), or many bodily areas simultaneously (disseminated mucormycosis).

- **Cryptococcosis.** Cryptococcosis is brought on by Cryptococcus neoformans and Cryptococcus gattii. They typically cause lung infections, but they can also cause brain and spinal cord infections (cryptococcal meningitis).

Sign and Symptoms

There are multiple stages of skin changes associated with mycosis fungoides. Not everyone makes it through every stage. Some may happen concurrently. For many people, the first sign of disease in the early stage is a mycosis fungoides rash. Mycosis fungoides phases include:

- **Premycotic phase**: A scaly skin rash occurs. It appears on sections of your body not generally exposed to the sun, like your lower abdomen, thighs, butt and breasts (chest).
- **Patch phase:** The skin around the rash gets thin. It may be itchy and dry, like eczema.
- **Phase of plaque:** Your skin develops hard or tiny, elevated bumps.
- **Phase of the tumour:** Tumours develop on your skin as elevated patches that pierce deeper than plaques. Your thighs, groin, armpits, and the inside of your elbow are the most frequently affected areas. The tumours may become infected and form ulcers.

Sign/Symptoms

Signs of infections that are superficial or subcutaneous

The following are signs of subcutaneous or superficial infections:

- redness, rash, pain, or itching in the afflicted area. cracked, thick, or discoloured nails.
- White spots in the tongue or throat, taste loss, or pain during eating. a bump under your skin that is painless.

- Fungal infection symptoms in the lungs

The following are signs of a fungal lung infection:

- Sometimes you'll cough up blood.
- exhaustion (tiredness).
- warmth.
- difficulty breathing.
- sore muscles.
- joint aches.
- an ache.
- Sweat at night.

Causes

Different groups of fungus, each of which causes a particular kind of illness, are the source of fungal infections.

- **Dermatophytes:** -The most frequent cause of superficial skin infections like ringworm, athlete's foot, and fungal nail infections is dermatophytes. These fungus thrive on skin, nails, and hair because they feed on keratin.
- **Yeast:** -Infections like oral thrush, vaginal candidiasis, and skin rashes in moist body folds are caused by yeasts, particularly Candida species.
- **Moulds:** -In individuals with compromised immune systems, moulds like Aspergillus can migrate to other organs and cause more serious infections, particularly in the lungs.
- Other environmental fungi that can enter the body through inhalation or broken skin include Histoplasma, Cryptococcus, and Sporothrix. These fungi can be found in soil or decomposing material.

Pathophysiology of Mycosis

Almost two-thirds of cutaneous lymphomas are T cell lymphomas. CD4 positive is the most prevalent immunophenotype.

Clonal growth of CD4 cells that frequently lack typical T cell antigens like CD7, CD5, or CD2 occurs in mycosis fungoides.

Keratinocytes draw these cells to the skin.

Pautrier microabscesses are the result of the cells clustering around the Langerhan cells as they build up in the dermis. A portion of the cancerous cells make their way to the nearby lymph nodes before entering the bloodstream and circulating among other CLA-positive T cells. [13]

Prognosis and Prospects Typical Disease Progression

The stage at diagnosis and the efficacy of treatment have a significant impact on the prognosis for Mycosis Fungoides. The prognosis for early-stage disease is frequently better, and many patients have long-term remission.

Factors Affecting Prognosis

The following are important variables that affect the overall prognosis:

- **Early Diagnosis:** The likelihood of a successful course of treatment increases with the early detection of the illness.
- **Treatment Adherence:** Effective disease management depends on adhering to the recommended treatment regimen.

Treatment

- **Psoralen plus ultraviolet A (PUVA therapy): -** is the most often suggested first-line treatment for mycosis fungoides. [5] PUVA is a type of photochemotherapy in which the photosensitising medication psoralen is either topically or orally, and then the skin is exposed to ultraviolet light. [27]
- Additional treatment alternatives are frequently required in cases of advanced mycosis fungoides because systemic treatments frequently result in resistance. [28]
- **Total skin electron beam therapy (TSEBT): -** skin-directed therapies in conjunction with systemic medications are recommended instead

of HN2 or UVB alone for patients with very symptomatic, generalised thicker plaques who require an immediate response. [29]

- **Targeted therapy using monoclonal antibodies:** These medications identify and eliminate cancer cells. If your body has not reacted to other systemic therapy, medical professionals may employ targeted therapy. Mogamulizumab-kpkc (POTELIGEO®) and brentuximab vedotin (Adcetris®) are examples of treatments.

Children

• Because different modalities have different safety profiles, treatment for mycosis fungoides in adults and children frequently varies. [15].

REFERENCES

1. Baranwal R, Choudhury DD, Ubale M, Nanoty V, Vishwanath V. Clinico mycological study of superficial mycoses and correlation with anti-fungal susceptibility among the Candida isolates in a teaching institution of Western India. Journal of Family Medicine and Primary Care. 2025 Jul 1;14(7):2660-5.
2. Vaidya T, Badri T. Mycosis Fungoides. 2023 Jul 31. StatPearls. Treasure Island (FL): StatPearls Publishing. 2025.
3. Cazzato G, Ronchi A, Bagaloni G, Giubellino A, Vitiello P, Franco R, Ribatti D, Ingravallo G. Rare variants of mycosis fungoides: a practical approach with emphasis on differential diagnosis. Diagnostic Histopathology. 2025 Feb 1;31(2):64-74.
4. Pagano L, Fernández OM. Clinical aspects and recent advances in fungal diseases impacting human health. Journal of Antimicrobial Chemotherapy. 2025 Mar;80(Supplement_1): i2-8.
5. Johnson NA, Venables ZC, Mistry K, Levell NJ. P068 A history of mycosis fungoides: from Alibert to mogamulizumab. British Journal of Dermatology.2024Jul;191(Supplement_1): i46-.
6. Brown GD, Ballou ER, Bates S, Bignell EM, Borman AM, Brand AC, Brown AJ, Coelho C, Cook PC, Farrer RA, Govender NP. The pathobiology of human fungal infections. Nature Reviews Microbiology. 2024 Nov;22(11):687-704.
7. Hsu TJ, Lee CH. Implantation mycoses and invasive fungal infections with cutaneous involvement in tropical taiwan: an 11-year retrospective study of a medical center. Journal of Fungi. 2023 Mar 5;9(3):322.
8. Miyagaki T. Diagnosis of early mycosis fungoides. Diagnostics. 2021 Sep 19;11(9):1721.
9. Cornely OA, Hoenigl M, Lass-Flörl C, Chen SC, Kontoyiannis DP, Morrissey CO, Thompson III GR, Mycoses Study Group Education and Research Consortium (MSGERC) and the European Confederation of Medical Mycology (ECMM). Defining breakthrough invasive fungal infection–Position paper of the mycoses study group education and research consortium and the European Confederation of Medical Mycology. Mycoses. 2019 Sep;62(9):716-29.
10. Souza AC, Amaral AC. Antifungal therapy for systemic mycosis and the nanobiotechnology era: improving efficacy, biodistribution and toxicity. Frontiers in Microbiology. 2017 Mar 7; 8:336.
11. Board PA. Mycosis Fungoides (Including Sézary Syndrome) Treatment (PDQ®). InPDQ Cancer Information Summaries [Internet] 2017 Jul 11. National Cancer Institute (US).
12. Havlickova B, Czaika VA, Friedrich M. Epidemiological trends in skin mycoses worldwide. Mycoses. 2008 Sep; 51:2-15.
13. Hay RJ. Fungal infections. Clinics in dermatology. 2006 May 1;24(3):201-12.
14. Adam A. Monoclonal antibodies and immunotherapy: theory and applications.
15. Walsh TJ, Dixon DM. Spectrum of mycoses. Medical microbiology. 1996;4(1):919-25.

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