Methods: This was a hospital-based prospective study conducted in the isolates obtained from clinically suspected cases of dermatophytosis in the patients. Skin, nail, and hair samples of patients suspected with superficial fungal infections were processed for dermatophytes using conventional microbiological methods. NMR-based identification of metabolites was carried out in cell extracts prepared from the culture suspensions of T. mentagrophytes and T. rubrum obtained during the study from a subset of the clinical isolates. The study was approved by the institutional ethics committee.

Results: Dermatophytes were isolated in 70.8% (2120/3005) cases, with T. mentagrophytes being isolated in 65% (1942/3005) of isolates, followed by T. rubrum in 31.5% (962/3005) isolates. In NMR study, it was found that T. mentagrophytes ATCC 11245 and T. rubrum ATCC 20015 strains are more susceptible to antifungals compared to T. mentagrophytes and T. rubrum strains with which 22 metabolites were common to both fungi, however, 6-hydroxypropyl- and acetate was found specific to T. rubrum, and allantoin was found specific to T. mentagrophytes. These specific metabolites could be useful for early identification of dermatophytes as well early determination of antifungal susceptibility by using metabolic endpoints, further large-scale study will be helpful in this regard.

Conclusion: T. mentagrophytes was the predominant dermatophytic species in the study. Among the number of metabolites detected in T. rubrum and T. mentagrophytes, 6-hydroxypropyl- and acetate was found specific to T. rubrum, and allantoin was found specific to T. mentagrophytes. These specific metabolites could be useful for early identification of dermatophytes as well early determination of antifungal susceptibility by using metabolic endpoints, further large-scale study will be helpful in this regard.

P102
Role of histone production in cutaneous tinea
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Poster session I, September 21, 2022, 12:30 PM - 1:30 PM

Objective: To determine the role of histone production in dermatophytes isolated from skin lesions of study patients.

Methods: An observational study conducted in UCMS and GTB Hospital, Delhi, in clinically diagnosed and mycologically confirmed cases of cutaneous tinea infection of glabrous skin to analyze the role of histone production in dermatophytes. After taking written informed consent from the study population sample collection (skin scraping) was done. The scraping was then immersed in 30% potassium hydroxide (KOH) for direct microscopic examination followed by culture on Sabouraud Dextrose Agar (SDA) with chloramphenicol and cycloheximide, and dermatophyte test medium which was followed by geotaxonomic confirmation by PCR of the ITS region and sequencing of PCR amplicons using already published protocols.

Results: 140 cultures were obtained from 80 patients, T. mentagrophytes was the most common dermatophyte isolated (58.6%), followed by T. rubrum (26.4%) and T. interdigitale (13.6%). The histone production was observed in 66% of T. mentagrophytes isolates, 64% of T. rubrum isolates, and 36% of T. interdigitale isolates. Histone production was observed in 70% of T. mentagrophytes isolates, 76% of T. rubrum isolates, and 50% of T. interdigitale isolates.

Conclusion: Histone production is essential for dermatophytes to have pathogenicity and to cause cutaneous tinea lesions.

P103
In vitro interaction of Malassezia and communal Staphylococcus species
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Poster session I, September 21, 2022, 12:30 PM - 1:30 PM

Objective: Malassezia is the most abundant fungal skin commensal organism, representing 50%–80% of total fungal present on the skin. It has been associated with many skin disorders such as pyoderma gangrenosum (PG) and seborrheic dermatitis/malassezia (SDM). The role of Malassezia in disease manifestation is not discerned. It is important to understand its interaction with bacterial flora such as Staphylococcus epidermidis and S. capitis in vitro. We have studied the interaction of Malassezia and Staphylococcus in vitro.

Methods: Malassezia restricta, M. globosa (n = 5) isolated from patients with SD and M. farfar (n = 5) isolated from PG were used as test subjects. A Multidisk Diffusion Test (MDT). Staphylococcus epidermidis and S. capitis were isolated from patients with SD and culturable on brain heart infusion (BHI) agar. Malassezia species requires media supplemented with lipids (MDM) for its growth. Bacteria and Malassezia were quantified on MDA and BHI agar plates and method to perform interaction between them. Direct interaction, competition (100 µl of M. restricta, M. globosa, and M. farfar were prepared in normal saline and added to wells on the plates of lawn cultures containing S. epidermidis and S. capitis (107 CFU/mL)). Plates were incubated for 12 h at 37°C and observed for some of inhibition. To investigate the role of antimicrobial compounds into the extracellular environment, M. farfar was inoculated in modified Dixon’s broth (MB) and incubated at 35°C for 3 days. S. epidermidis and S. capitis was used as control on MDA and BHI media. Zones of inhibition (ZOI) was measured with M. restricta (20 ± 0.4 mm, 20 ± 0.6 mm) M. globosa (25 ± 0.4 mm, 22 ± 0.4 mm) and M. farfar (25 ± 0.4 mm, 15 ± 2 mm) against S. capitis and S. epidermidis respectively by direct interaction. Inhibition of bacteria by M. farfar was found from 48±12.8 to ZOI (21 ± 4.5 mm) which was observed on bacterial lawn cultured plate. When growth kinetics of S. epidermidis was monitored in presence of M. farfar, maximum value reached at 0.26 ± 0.018 only from 0.03 ± 0.015 at 0600 h with lag phase of 4 h (Fig. 1). However, OD600 value reached up to 0.97 ± 0.012 in 1200 h indicating lag phase of 1.5 h in absence of supernatant. Drying time calculated from logistic growth equation was 76 ± 4.6 ± 2.9 minutes in the presence and absence of supernatant respectively.

Conclusion: Inhibition of bacteria by Malassezia species noted in our study has not been reported earlier. The possible production of antimicrobial compounds by Malassezia might be responsible for dysbiosis leading to disease.
P106
A dermoscopic finding of Tinea capitis caused by Microsporum canis
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Poster session 1, September 21, 2022, 12:30 PM - 1:30 PM
Objective: Tinea capitis is a relatively common disease, and the mycological examination is the gold standard for diagnosis. However, the probability of false negatives on the KOH test is up to 40% and culture examination takes a long time for diagnosis. The characteristic pattern of dermatoscopy not only aids in diagnosis, but also enables early treatment.
Methods: We evaluated 6 patients who were diagnosed with tinea capitis through clinical and dermoscopic findings. The images of the lesions were taken with a digital camera (Nikon, HB-42) and photographed with dermoscopy (DermLite Post 2 Pro) from the patients. The pictures were obtained by taking multiple focal points with dermatoscopy. The cornia, coricore, Microspora-like, ring, and bare hair were observed as the main findings.
Results: The dermoscopic finding was won with overlapping of various findings in each of the patients. Upon dermoscopy, the most common findings were the coricore hair (66%) and the bare hair (66%). The coricore hair (53%) and the proximal white shaft hair (53%) were less frequently observed and argan hair and Microspora-like hair were not seen in six patients. In the photograph taken with a camera, findings considered to be dermoscopic features such as cornicore hair or coricore hair were not observed.
Conclusion: It is important for dermatologists to consider that abnormal findings in dermoscopy can play an important role in diagnosing Tinea capitis. It will help in early treatment and prevent the progression of complications. Herein, we report specific dermoscopic findings which can narrow down the differential diagnosis.

P107
Spectrum of Dermatophyte infections and drug susceptibility pattern of Dermatophytes in patients visiting to tertiary care hospital in Chhattisgarh state of India
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Poster session 1, September 21, 2022, 12:30 PM - 1:30 PM
Objective: 1. To isolate and identify various species of Dermatophytes from clinical specimens 2. To perform and analyze the antifungal susceptibility testing of isolated Dermatophytes for commonly used antifungal agents, terbinafine and itraconazole.
Methods: A prospective study was conducted from December 2019 to October 2021. Clinical specimens (skin, hair, nail) from suspected cases of dermatophytes were received and processed in the Department of Microbiology. All the samples were subjected to microscopic examination and culture by standard techniques. Their clino-demographic profile was obtained. Specimens were processed for KOH and fungal culture. Dermatophytes were identified by studying macroscopic and microscopic characteristics of the isolates. The colonies-forming dermatophytes isolates were processed for antifungal susceptibility testing for terbinafine and itraconazole by Microbroth dilution testing following the CLSI-M-36A2 guidelines.
Results: Total 248 patients with nail predominance (68%) were noted in the above-mentioned study period. Predominance of study population belonged to rural area. Maximum numbers of cases were from the age group 21-30 years. Majority of patients belong to poor socioeconomic status. Out of 248 samples, 178 (72%) had a positive KOH mount amongst which 72% had positive culture results. Amongst 248 samples, 178 (72%) were skin scraping, 3% were nail, and 14% hair samples were processed. Out of culture-positive samples 52% were Dermatophytes. The most clinical forms of dermatophytes were combination of both Trichophyton and T. capitata (31%) followed by T. tonsurans (22%), and T. mentagrophytes (17%) for which skin scraping was processed. The most common isolates were Trichophyton tonsurans (73%), followed by T. mentagrophytes (15%), and T. soudanense. Ochrophyton was diagnosed in 17% patients of which 59% were positive KOH 49% were culture positive. 11.3% isolates from nails were dermatophytes.
Antifungal susceptibility testing was done by Microbroth dilution method and analyzed the range. The MIC range of major isolates, i.e., T. tonsurans showed MIC ranges against terbinafine 0.03-4 µg/ml and itraconazole 0.03-2 µg/ml. Trichophyton mentagrophytes for terbinafine <0.12-4 µg/ml and for itraconazole 0.12-2 µg/ml. Four isolates of T. tonsurans had higher MIC values for terbinafine and two isolates had higher MIC for itraconazole. One isolate of T. mentagrophytes had higher MIC values of itraconazole, and one another isolate had higher MIC for terbinafine.
Conclusion: This study highlights the change in pattern of causative agents of dermatophytes. The present study showed the predominance of T. tonsurans. More extensive studies are needed to evaluate the cut-off range of antifungal susceptibility testing of dermatophytes with clinical follow-up to see the response of respective antifungal and to guide the therapy.

P110
AIRE gene mutation predisposing chronic mucocutaneous Candidiasis in two kids from a Chinese family
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Poster session 1, September 21, 2022, 12:30 PM - 1:30 PM
Objective: Chronic mucocutaneous candidiasis (CMC) is a group of clinical syndromes characterized by chronic recurrent skin, nails, and mucosal superficial Candida infections. Various gene mutations have been reported to predispose individuals to CMC and its related syndromes. This study aims to study the clinical features and the genetic background underlying two kids of CMC from a Chinese family.
Methods: Clinical and laboratory findings of the two patients were studied, including physical examination, direct microscopic examination, and fungal culture. Genomic DNA of all family members was extracted from peripheral blood leukocytes, and whole-exome sequencing (WES) was performed.
Results: A 2-year-old boy and his sister were admitted to the hospital due to recurrent thrush and thickening of their nails. Direct microscopic examination of their nails and the brother’s tongue showed branched pseudohyphae and yeast cells, and Candida albicans was identified through fungal culture. The brother also experienced a progressively impaired vision, which was diagnosed as retinitis pigmentosa, causing no light perception in one eye and light perception up to 1/1 in the other. Their parents belonged to the Han population in minority population in China and had a history of consanguineous marriage. Chronic mucocutaneous candidiasis (CMC) was diagnosed, and oral fluconazole was prescribed. Another continuous fluconazole treatment for 6 months, the nails and the tongue became normal. These patients still under follow-up.
Due to the recurrent Candida infections and history of consanguineous marriage, genetic susceptibility was suspected. We compared the WES data with all genes reported to be related to CMC, a homogenous mutation in the AIRE gene was noted (c.769C>T; p.Arg257Ter) in both patients. The parents were heterozygous carriers of the variant.
Conclusion: In this study, we identified two CMC patients of Chinese harboring AIRE mutations. These patients remain as the importance of genetic analyses in management of CMC, which then help to adjust the time of treatment, as well as to predict and early detect related complications.

P111
A case of nail discoloration due to topical treatment of onychomycosis with halobenzoic 5% nail solution
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Poster session 1, September 21, 2022, 12:30 PM - 1:30 PM
Objective: We use efinaconazole 10% topical solution and halobenzoic 5% nail solution for topical treatment of onychomycosis in Japan. We show a case of onychomycosis treated with nail debridement and topical halobenzoic 5% nail solution to the nail and topical halobenzoic 1% ointment to the foot.
A woman in her twenties with chronic urticaria had a nail spike color change on her left big toe (Fig. 1). We opened the spike lesion with a plastic nippers and KOH direct microscopic examination showed dermatophyton. We treated with topical halobenzoic cream on the toes and sole of the foot and 5% solution on the nail. Because of the summer season, she walked outside in sandals without socks during treatment and noticed the nail yellow color change (Fig. 2). We advised the patient to protect from sun light and not to walk outside without socks. Due to the report from the production company, the reason for nail color change to yellowish in photodermatoglyphsis of halobenzoic. After 1 year since first time, the fungal infection of the big toe disappeared by our topical treatment. The nail yellow color change also disappeared. We recommended avoiding sunlight exposure on the treated nail during topical treatment of halobenzoic 5% nail solution.