Abstract N°: 96

Dermoscopy use by Moroccan dermatologists and its impact on the confidence level : a cross-sectional survey

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Introduction & Objectives: Dermoscopy has an evidence base supporting its use in all the fields of dermatology especially skin cancer detection. Many studies investigated dermoscopy use among dermatologists in different countries, however and to date, no study has formally reported dermoscopy use in Africa. This survey aimed to complete a gap in the literature concerning dermoscopy use in Morocco, and to investigate its impact on the doctor's self-confidence.

Materials & Methods: This was a cross-sectional -questionnaire based -study of dermoscopy use among dermatologists in the region of Casablanca, Morocco. The assessment of the confidence level was performed using a 5-point Likert scale.

Results: Seventy dermatologists were included in this survey, the majority of them (68%) had less than 10 years of practice in dermatology. Only 60% of dermatologists own a dermoscope. However, 73 % used it less than four times per week. The reasons of non-use of dermoscopy were mainly lack of training and interest. 95% of the users thought that dermoscopy use brought an added value to their diagnostic approach, and decrease the number of biopsies performed (61%). The factors significantly associated with using dermoscopy, and increasing the confidence level were having training in dermoscopy and being young (p=0.002, p=0.004 respectively).

Without using dermoscopy, 65% of the respondents were confident of their clinical examination alone, while using dermoscopy increased the confidence level , since 96% of the respondents were confident.

Conclusion: This first Moroccan and African study confirmed that dermoscopy use in Morocco is low among dermatologists, especially the old generation. Lack of training was the main reason of non-use,

These results highlight the necessity of incorporation of dermoscopy training in the residency programs, along with continuing education dermatology teaching programs, in order to increase this technique use among dermatologists in Morocco and Africa.

Abstract N°: 294

Reflectance confocal microscopy in vHSIL and lichen sclerosus: a descriptive study in patients and healthy controls.

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Reflectance confocal microscopy in vulvar HSIL and lichen sclerosus: a descriptive feasibility study in patients and healthy controls

Introduction & Objectives:

Incorrect and delayed diagnosis of vulvar high-grade squamous intraepithelial neoplasia (vHSIL) and lichen sclerosus (LS) increases malignant progression risks and negatively impacts prognosis and quality of life. There is a need to improve diagnosis and monitoring. Reflectance confocal microscopy is a non-invasive imaging tool that visualizes skin structures at cellular resolution. The objectives were to explore feasibility and patient acceptability of vulvar RCM imaging and to identify RCM-characteristics that are discriminative for vulvar HSIL and LS.

Materials & Methods:

This was a prospective, cross-sectional, observational clinical trial in patients with vHSIL and LS compared to healthy volunteers. RCM images and vulvar tissue samples were obtained.

Results:

Five (5) patients with vHSIL, 10 patients with LS and 10 healthy volunteers were enrolled. In total, 100 image series of vulvar skin were obtained, including lesional and non-lesional sites. The RCM technique was considered acceptable for application by patients and healthy controls. Healthy vulvar skin was characterized by a homogenous, normal honeycomb patterned epidermis and a clear epidermal-dermal junctions. Vulvar HSIL and LS displayed an atypical honeycomb pattern of the epidermis and lymphocytic influx with presence of melanophages. Distinct features specifically observed in LS included the presence of hyalinised vessels and sclerotic areas in the dermis.

Conclusion:

RCM is a non-invasive imaging technique that is feasible and clinically acceptable to apply on vulvar skin, both in patients with premalignant lesions and healthy controls. Recognition and validation of disease-specific characteristics could make reflectance confocal microscopy a clinical tool to non-invasively aid identification of vulvar premalignancies.

Abstract N°: 314

Through the Lens: A Comparative Analysis of In Vivo Reflectance Confocal Microscopy and Dermoscopy in Diagnosing Fusarium and Trichophyton rubrum-Induced Onychomycosis

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Introduction & Objectives:

Onychomycosis (OM), a common fungal infection, poses diagnostic challenges due to the limitations of conventional methods. Early identification of the causative fungi is crucial to prevent nail dystrophy and loss. Dermoscopy and in vivo reflectance confocal microscopy (RCM) offer promising diagnostic tools to enhance mycological detection. This case series presents successful diagnoses of OM using RCM and discusses the distinctive features of Fusarium and Trichophyton rubrum, which were confirmed through potassium hydroxide (KOH) examination and fungal culture, while comparing the findings with literature.

Materials & Methods:

A 66-year-old woman presented with yellow-white discoloration and leukonychia in the proximal 4th finger of the left hand, while a 45-year-old male patient exhibited black, brown, and yellow discoloration, and subungual hyperkeratosis of both great toenails. Dermoscopy, RCM, direct microscopic examination with KOH culture, and histopathological evaluation (HP) of full-thickness nail clippings using Periodic Acid-Schiff and Grocott's Methenamine Silver stains were performed.

Results:

KOH examination revealed fungal elements consisting of spores and mycelium, as well as only spores, respectively. HP confirmed OM in both cases, with the presence of mycotic hyphae and spores. Fusarium proliferatum and Trichophyton rubrum were identified as the fungal growth on culture, respectively.

In the first case, dermoscopy revealed characteristic features of proximal white subungual OM, including a white-yellow structureless opacity including the lunula, white transverse striate pattern, superficial white opaque clods, and yellow-brown discoloration. Second case exhibited fungal melanonychia with black-brown longitudinal bands, yellow-white longitudinal striae, an aurora borealis pattern, subungual hyperkeratosis with a ruins aspect, and a distal irregular termination, indicative of total dystrophic OM. RCM revealed bright hyper-reflective roundish structures in both cases, as well as aggregates of bright, refractile, linear branching filamentous structures in the second case. These findings were consistent with the culture results, indicating correlation between RCM and culture findings.
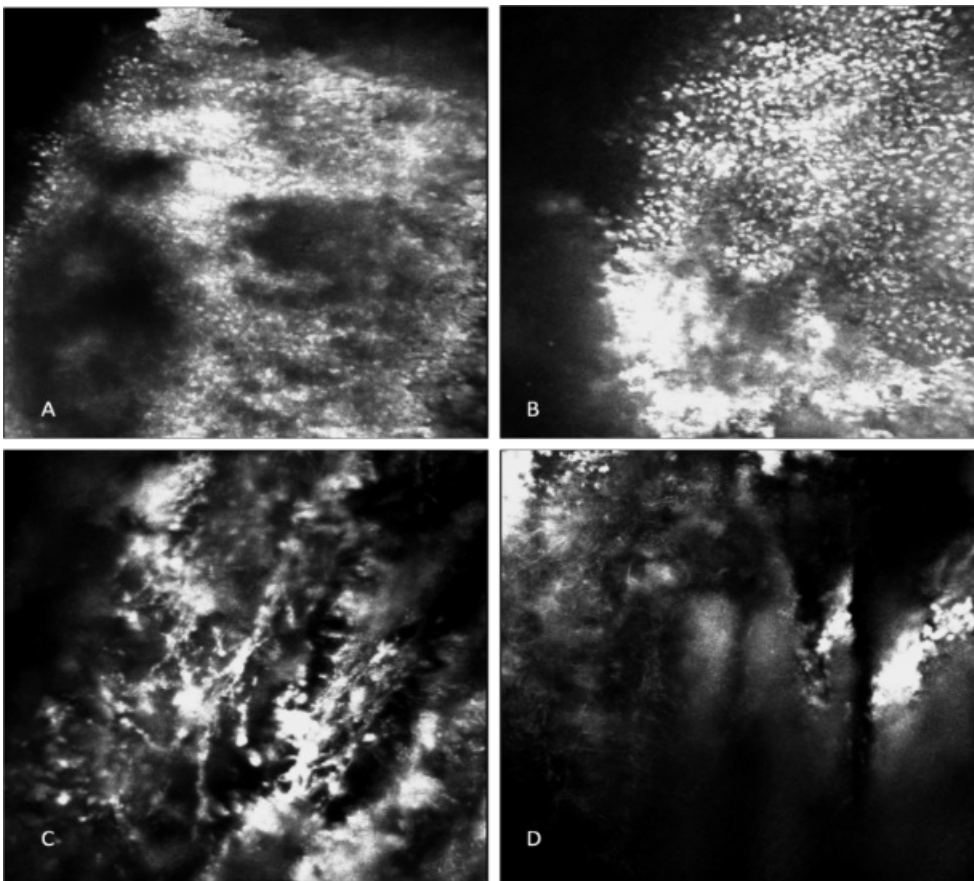
Figure 1 RCM images of fungal infections (A,B) Fusarium proliferatum with hyper-reflective round structures (C,D) Trichophyton rubrum with refractile linear branching structures and round structures

Conclusion:

Dermoscopy offers a cost-effective approach to identify microscopic features, while RCM provides high-resolution imaging for real-time evaluation, by penetrating nails at depths of 400–500 μm, allowing the identification of fungal colonies. Dermoscopy reveals yellow-white streaks corresponding to fungal colonies extending proximally, while the presence of multicolored streaks creates an aurora borealis pattern. In RCM, hyphae appear as bright, linear, prolonged, thready-like, branching, and filamentous structures, while spores exhibit a bright, roundish appearance with high reflection.

Further studies are needed to explore the diagnostic utility of RCM in larger patient populations. RCM offers a fast, non-invasive, and convenient approach to diagnosing onychomycosis, providing in vivo insights for treatment planning and valuable information about the specific fungal infection type.

Abstract N°: 438

Follow-up of leprosy patients to prevent irreversible damage does not be time-consuming.

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Introduction & Objectives:

Dermatologists often feel that it takes too much time to assess a leprosy patient, so they leave the assessment to others or don't do the assessments at all.

How you should attend to your patients, including discovering impending nerve damage during follow-up, when you no longer have a well-trained physical therapist.

This is a teaching presentation based on 50 years of working with leprosy.

Materials & Methods:

A patient, who is known to have leprosy comes for a follow-up: A protocol.

Results:

Have the patient enter your office barefoot, bringing his/her shoes. Watch how he/she walks and check whether the shoes are appropriate. Have the patient stand in front of you and look at his/her toes, are hammertoes developing?

Then have the patient sit. Study their face for asymmetry, do they blink and are their eyes in danger of sensory loss? Then palpate the nerves. Great auricular, ulnar, median, radio cutaneous, lateral popliteal, posterior tibial, and other nerves when appropriate.

Look at the hands: feel for sweating and test the sensation with monofilaments (Semmes-Weinstein), but only the thenar and hypothenar. Note any increasing muscle atrophy. Do a Voluntary Muscle Test (VMT) for thumb abduction and for the little finger, test the abductor digiti minimi. Feel the muscle for the contraction.

Feel whether the soles of his/her feet are sweating and whether there are wounds. Do a simple 2-point discrimination test on the forefoot and heel. Test dorsiflexion of the feet and big toes.

Record everything carefully. You can use a ready-made form or mention the deviations in your notes.

All this can be done in 5-10 minutes.

Conclusion:

In this way, an increase in nerve damage can be detected early and the action is timely. The patient can get better instead of worse under your care, which happens too often nowadays, particularly in so-called developed countries.

Abstract N°: 1159

Patterns of laboratory testing at the time of diagnosis of generalized pustular psoriasis (GPP)

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Introduction & Objectives:

Generalized pustular psoriasis (GPP) is a rare, chronic and severe neutrophilic skin disease characterized by episodes of widespread eruption of sterile pustules that may occur with or without systemic inflammation. Recurrent or intermittent flares are characteristic of the clinical course of GPP during the maintenance phase of treatment, and symptoms vary between patients in their severity and impact. The objective of this study was to characterize laboratory testing performed at the time of diagnosis of GPP and the associated results that indicate a GPP flare.

Materials & Methods:

This was a retrospective chart review of patients of all ages with a confirmed GPP diagnosis at 27 participating sites in France, Malaysia and Tunisia from 2011 to February 2022.

Results:

Of the 175 patients in this study, 129 (73.7%) had at least 1 of 28 total laboratory parameters tested at the time of GPP diagnosis. Eight laboratory parameters were tested in ≥80% of patients: alanine aminotransferase (ALT), white blood cell (WBC) count, haemoglobin, platelet count, creatinine, potassium, sodium and absolute neutrophil count (ANC); less frequently tested parameters included C-reactive protein (CRP; 43.0%), erythrocyte sedimentation rate (ESR; 21.7%) and magnesium (10.9%). Most patients had laboratory results within normal ranges; however, among the tests, 1.6–43.4% of patients had at least one parameter with clinically meaningful values outside normal ranges, indicating a flare, associated infection, or both. The most frequently encountered laboratory abnormalities (proportion of tested patients with abnormal results) were elevated CRP (73.7%), ESR (71.4%), WBC count (58.3%), ANC (×109 L; 52.8%), increased neutrophil count (45.5%) and low serum albumin (38.2%).

Conclusion:

Although most patients with GPP had laboratory assessments performed at diagnosis, important blood tests such as ESR and CRP were only ordered for 21.7% and 43.0% of patients, respectively. Up to 43.4% of patients had a laboratory test result indicating a potential GPP flare. Patients with suspected GPP should be screened with all relevant assessments to aid diagnosis, determine severity and enable prompt initiation of treatment.

Abstract N°: 1831

THE ROLE OF REFLECTANCE CONFOCAL MICROSCOPY IN PIGMENTED BOWEN'S DISEASE

Matheus Alves Pacheco* , Natalia Rengel , Ariel Rosa , Gabriella Funchal , Fernanda E Lima , Athos Martini

Introduction & Objectives:

This case report describes a rare variant of Bowen's disease called Pigmented Bowen's disease. The objective is to highlight the diagnostic tools used and provide a brief review of their roles in diagnosing the condition.

Materials & Methods:

A 63-year-old male patient with a pigmented lesion in the right groin, present for 2 years and

exhibiting growth, was examined. Clinical examination and polarized light dermatoscopy were

performed. Further investigation included Microscopy of Reflectance Confocal (MRC) using

Vivascope 1500. The lesion was excised, and histopathological analysis was conducted.

Results:

Clinical examination revealed a blackish nodule with irregular borders and surfaces. Dermoscopy

showed irregular, amorphous, dark pigmentation with bright whitish lines and areas of

hyperkeratosis. MRC revealed irregular honeycomb-like epidermal pattern, sparse bright dendritic

cells in the granular layer, increased melanin content in the epidermis, and a "button" sign corresponding to perpendicular dermal vessels. Histopathological analysis confirmed the diagnosis

of pigmented in situ squamous cell carcinoma.

Conclusion:

Pigmented Bowen's disease is a rare subtype of Bowen's disease characterized by pigmented, flat, and asymptomatic plaques in sun-protected areas. The diagnosis is established through

dermatoscopy and histopathological analysis. The use of Reflectance Confocal Microscopy aids in

distinguishing lesions resembling melanoma. This case report highlights the importance of thorough

examinations and the valuable role of confocal microscopy in the diagnosis of Pigmented Bowen's

disease.

Abstract N°: 2109

Comparison of teledermatology and face to face visit diagnostic accuracy for malignancy estimation in the diagnosis of pigmented lesions

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Introduction & Objectives: Rapid diagnosis of malignant pigmented lesions are necessary for a good prognosis. Since the lack of quick and easy access to a dermatologist delays the diagnosis process, the teledermatology method with significant magnification and resolution images is used to improve and facilitate the correct diagnosis. The purpose of this study was to assess the diagnostic accuracy of the teledermatology method using a cutting-edge skin imaging technology as well as a mole analyzer software and comparing them with the face-to-face clinical examination for the diagnosis of pigmented lesions confirmed with histopathology.

Materials & Methods: Thirty patients with suspicious pigmented lesions were included in the study. Face to face clinical differential diagnosis by a dermatologist were recorded. Then, imaging of the suspicious lesion with a skin imaging device (images with a resolution of 1920 x 1080 pixels and 20 times magnification) and also analysis with a mole analyzer software were performed. Afterward, patients were referred for biopsy. The images were observed by another dermatologist to provide clinical diagnosis. In order to determine the sensitivity and specificity of assessment methods, the results obtained from each method were compared with the results of the gold standard (pathology). Sensitivity and specificity of three methods were calculated for malignant and borderline versus benign lesions. Inter-method reliability between gold standard and other methods was evaluated using Cohen's kappa coefficient.

Results: The agreement between the pathologic diagnosis and the teledermatology diagnosis was fair (kappa: 0.49, p>0.001). The agreement between the pathology and the face to face diagnosis was moderate (kappa: 0.41, p>0.001). The agreement between the pathology and the mole analyzer software methods was poor (kappa: -0.01, p: 0.53). In comparison with the gold standard, the sensitivity and specificity was 63.6% & 78.9% for teledermatology method, 55.6% & 91.7% for face to face method, and 26.7% and 53.3% for mole analyzer software method, respectively.

Conclusion: In this study, the diagnostic sensitivity of teledermatology method and the specificity of face to face method were higher than the other ones for the diagnosis of malignant pigmented lesions. Therefore, if it is possible for dermatologists to view full HD images remotely, high accurate diagnoses can be realized with the possibility of significant savings in the time and costs of the doctor and the patient.

Abstract N°: 2282

Ultrasound in the diagnosis and preoperative mapping of subungual Glomus Tumor

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Introduction & Objectives: Glomus tumors are described as rare benign tumors with low malignant potential. Due to their unobservable nature through visual inspection or palpation, nail unit tumors are sometimes misdiagnosed. While the field of imaging is rapidly advancing, studies investigating the detailed relationship between subcutaneous tumors and imaging findings are scarce. The objective of this report is to present an uncommon diagnosis case using ultrasonography (USG) and discuss diagnostic and pre-surgical methods for subungual glomus tumors.

Materials & Methods: A 35-year-old male oceanographer was referred for ultrasound evaluation of the right fourth finger. The patient had a 6-month history of moderate (6 on a scale of 0 to 10) pain in the periungual region of the affected finger, which worsened with local compression. Clinical examination did not reveal any abnormalities upon transillumination of the nail or worsening with cold exposure. A positive Love test (PinTest) was observed. The patient had undergone magnetic resonance imaging (MRI) weeks earlier, which did not identify a tumor at the complaint site. Due to clinical suspicion, the patient underwent preoperative evaluation using high-frequency ultrasound. The examination, performed with a 22 MHz linear transducer, revealed a well-defined hypoechoic nodular lesion in the nail matrix, measuring 2.0 x 1.5 mm, with slight bone remodeling. Ultrasound-guided lesion marking and subsequent surgical excision were performed.

Results: Histopathological examination revealed a well-circumscribed nodular tumor surrounded by a fibrous pseudocapsule. The tumor consisted of proliferating rounded cells with eosinophilic cytoplasm, surrounded by an amphophilic stroma that encased branched vessels.

Conclusion: Nail tumors can present a diagnostic challenge. Glomus tumors exhibit characteristic clinical symptoms but are a rare condition that may require high-quality imaging assistance for accurate diagnosis. Previously, MRI was considered the best examination for detecting small nail tumors, but with the advancement of ultrasound, especially high-frequency ultrasound, this notion has been questioned. Ultrasound has proven to be an important tool for evaluating nail tumors, performing as well as or even better than MRI. In our case, we identified a small tumor that was not detected by MRI and accurately determined the surgical parameters using ultrasound. While we aim to broaden our diagnostic options, further studies are needed to determine the gold standard imaging examination for nail tumors.

Abstract N°: 2416

Diagnosis of actinic cheilitis with line-field confocal optical coherence tomography before and after treatment with Tirbanibulin

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Diagnosis of actinic cheilitis with line-field confocal optical coherence tomography before and after treatment with Tirbanibulin

Early and adequate treatment of actinic cheilitis is necessary to prevent the development of squamous cell carcinomas of the lips. Diagnosis is usually made clinically or by a punch biopsy. Line-field confocal optical coherence tomography (LC-OCT) is frequently used for the diagnosis and monitoring of actinic keratoses before and after treatment. LC-OCT is a combination of the techniques of optical coherence tomography and confocal microscopy with a visualization of the epidermis and dermis up to a depth of 0.5 mm at the cellular level in a three-dimensional image.

Indications for actinic keratoses of the skin are thickened epidermis with atypical keratinocytes, disruption of stratum corneum, enhanced entrance signal with preserved dermoepidermal junction and increased subepidermal vessels. These changes can also be seen on the lips.

To prevent the development of squamous cell carcinomas, there are nonsurgical and surgical treatment options. Vermilionectomy has a good clearing rate in previous studies, but patients often suffer from postoperative complications like impaired sensitivity of the lip. Current nonsurgical treatment options that have previously been reported in small cohort studies are diclofenac, photodynamic therapy and imiquimod. There is currently no approved nonsurgical treatment for actinic cheilitis.

Tirbanibulin is used for the treatment of actinic keratoses of the face or scalp for 5 consecutive days. We used Tirbanibulin in an 84-year-old patient with actinic cheilitis of the lower lip. We examined the lesions with LC-OCT for diagnosis and evaluation of healing after treatment. Three months after treatment, the lower lip was examined with LC-OCT. The epidermis was not thickened anymore, keratinocytes were of regular structure, dermoepidermal junction was visible, Str. corneum and subepidermal vessels were normal.

Abstract N°: 2752

Demodex infestations in common facial dermatoses: Acne vulgaris, rosacea, seborrheic dermatitis

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Introduction & Objectives:

Demodex mites are found on the skin of many healthy individuals. A diagnosis of demodicosis or Demodex infestation is considered when clinical signs/symptoms appear and when more than 5 mites/cm2 are present or when they penetrate into the dermis. Demodex mites have been reported to be associated with various skin manifestations. Rosacea, acne vulgaris (AV) and seborrheic dermatitis (SD) are the three most common inflammatory facial dermatoses; they affect the pilosebaceous unit and have a predilection for the sebaceous gland-rich facial areas. Demodex mites are also found in the pilosebaceous unit, causing inflammation and leading to immune reactions. The present study was conducted to investigate the association between AV, rosacea and SD and demodicosis.

Materials & Methods:

This prospective, observational case-control study included 127 patients (43 with AV, 43 with rosacea and 41 with SD) and 77 healthy controls. The presence of demodicosis was evaluated by standardized skin surface biopsy (SSSB) in both the patient and control groups.

Results:

A total of 204 subjects were enrolled in the study, including 127 patients with facial dermatosis and 77 healthy controls. 66 of the 127 patients (52.0%) had a Demodex infestation, while only two of the 77 healthy controls (2.6%) had infestations. Demodex infestation rates were significantly higher in patients than in controls (p = 0.001). Demodex infestation rates were significantly higher in the rosacea group than in the AV, SD groups and controls (p = 0.001, p = 0.024, and p = 0.001, respectively). Demodex infestation was found to be significantly higher in the AV and SD groups than in the controls (p = 0.001, p = 0.001, respectively). No difference was seen between the AV and SD groups in terms of demodicosis (p = 0.294).

Conclusion:

The findings of the present study emphasize that AV, rosacea and SD are significantly associated with Demodex infestation. The reactivation of the immune system, inflammation and follicular changes caused by the Demodex mites might contribute in the development of the diseases. SSSB, an easily accessible and practical tool, may be used to determine the presence of a Demodex infestation. Particularly in cases resistant to therapies, an accompanying Demodex infestation should be considered.

Abstract N°: 2899

Line-field confocal optical coherence tomography (LC-OCT) vs. Dynamic optical coherence tomography (D-OCT) for non-invasive imaging of skin changes under topical and systemic therapy of plaque psoriasis

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Introduction & Objectives:

The main goal of this study is to give non-invasive live imaging insights into skin changes and recovery of plaque psoriasis using line-field confocal optical coherence tomography (LC-OCT) compared to dynamic optical coherence tomography (D-OCT) under the treatment with Calcipotriol and Betamethason dipropionate cream and under systemic treatment with Interleukin-17- and -23-inhibitors.

To evaluate therapeutic efficacy of psoriasis treatment there is nowadays only the possibility of using clinical scores hence histology cannot be used as a follow-up method due to its invasiveness. There is only limited data concerning the skin alterations occurring in recovering skin affected by plaque psoriasis. Non-invasive imaging, such as LC-OCT or D-OCT, allows the evaluation of skin recovery over time by observation of specific changes concerning e. g. epidermis alterations, inflammation patterns or vessel proliferation.

Currently there is only few data concerning non-invasive live imaging using LC-OCT of plaque psoriasis and none concerning live imaging using LC-OCT of therapeutic responses in plaque psoriasis. The gold standard for evaluation of therapeutic success under treatment is the application of clinical severity scores, such as the Psoriasis area and severity index, or - regarding only one lesion - the lesional psoriasis severity index.

Materials & Methods:

A comparison is being conducted between the measured response of plaque psoriasis as seen in non-invasive live imaging vs. clinical response rate evaluated by application of the LPSI.

Overall, an observational study cohort of 70 patients will be assigned to two groups (35 individuals each), one group being treated only topically with Calcipotriol and Betamethason dipropionate cream and the other group being treated systemically with Interleukin-17- or 23-inhibitors. In both study groups the LPSI is assessed as well as clinical and dermoscopic pictures, LC-OCT and D-OCT imaging is being performed before beginning of the treatment (day 0) as well as after 4 and 12 weeks of treatment.

Results:

The study is still being conducted but interesting preliminary results will be ready for presentation soon.

Conclusion:

In this study the diagnostic usefulness of non-invasive live imaging like LC-OCT and D-OCT in the examination of plaque psoriasis shall be established. Furthermore, it is of great interest to figure out which changes occur first in affected psoriatic skin once topical or systemic treatment is being applied. An investigation on whether there are specific changes occurring in therapeutic response which could be used as marker for continuation or stop of the treatment shall be conducted.

Abstract N°: 3049

A New Approach for In Vivo Skin Cancer Diagnostics – Laser Induced Plasma Spectroscopy Combined with Deep Learning-based Diagnostic Algorithm

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Introduction & Objectives:

There have been many attempts to develop and apply in vivo skin cancer diagnostic methods based on different technologies, such as multi-spectral imaging, reflectance confocal microscopy, optical coherence tomography, Raman spectroscopy and electrical impedance spectroscopy. However, they have insufficient diagnostic accuracy for clinical use, resulting in none of the aforementioned technologies are widely used as reliable skin cancer diagnostic method in clinical settings.

We investigated the diagnostic accuracy and safety of a real-time noninvasive*in vivo* skin cancer diagnostics utilizing non-discrete molecular LIPS combined with a deep neural network (DNN)-based diagnostic algorithm.

Materials & Methods:

Laser-induced plasma spectroscopy (LIPS) can noninvasively extract biochemical information of skin lesions using an ultrashort pulsed laser. A Q-switched neodymium-doped yttrium aluminum garnet (Nd:YAG) laser with a wavelength of 1064 nm and pulse duration of 4 ns was used to irradiate the skin tissue and generate microplasma plumes. The microplasma emission induced from the tissue was collected and delivered to the optical fiber. A total of 353 patients were recruited for this study. *In vivo* LIPS spectra were acquired from 296 skin cancers (186 BCCs, 96 SCCs and 14 melanomas) and 316 benign lesions in a multisite clinical study. The diagnostic performance was validated using 10-fold cross-validations. For each round, an average of 7,731 and 859 spectral data points were used for training and testing respectively.

Results:

The LIPS spectra clearly identify the spectral peaks of Mg, Zn, Fe, CN band, Ca, Cu, Na, Hα, N, K, and O, as well as a continuum background of the broad spectral features. Trace elements, especially metal ions, play key roles in biological systems, participating in metabolic processes, being enzyme and protein constituents, and catalyzing chemical processes in living cells. The spectral difference between benign and cancerous tissues is predominantly caused by the emission peaks of metal ions, such as calcium (at 393.37 and 396.85 nm), sodium (at 589.00 and 589.59 nm), and iron (at 495.76 nm), and etc.

The sensitivity and specificity for differentiating skin cancers from benign lesions using LIPS and the DNN-based algorithm were 94.3% (95% CI: 91.6 – 96.9%) and 88.6% (95% CI: 85.1 – 92.1%), respectively. The area under the curve (AUC) of the receiver operating characteristic (ROC) was recorded to be 0.955. No adverse events, including

macroscopic or microscopic visible marks or pigmentation due to laser irradiation, were observed.

Conclusion:

The LIPS and deep learning-based skin cancer diagnostic device can be an objective tool to assist medical professionals for the evaluation of suspicious lesions and the decision for biopsy. This study shows promising opportunities for an accurate, real-time, in vivo skin cancer diagnostics in real clinical settings.

Abstract N°: 3191

Reflectance confocal microscopy in the diagnosis of Tinea Nigra- a case report

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Introduction & Objectives:

We present a case of a female patient with a palmar lesion suggestive of Tinea Nigra. Despite the clinical and mycological diagnosis, we performed a biopsy and reflectance confocal microscopy to explore the utility of these methods in the evaluation of fungal infections. Our objective is to discuss the use of confocal microscopy as a non-invasive tool for diagnosing inflammatory and infectious skin diseases, including fungal infections.

Materials & Methods:

A thorough clinical examination was performed, and a skin biopsy was obtained from the lesion for histopathological analysis. Additionally, reflectance confocal microscopy was utilized to visualize the microanatomical structures of the lesion. The decision to perform these procedures was based on academic interest, resource availability, and the patient's personal interest due to a family history of melanoma.

Results:

The histopathological examination and confocal microscopy allowed for a correlation between the diagnostic methods. Confocal microscopy, although primarily focused on melanocytic lesions, provided valuable insights into the microanatomy of the lesion. It demonstrated potential as a non-invasive and repeatable examination for evaluating inflammatory and infectious skin diseases, including fungal infections.

Conclusion:

Confocal microscopy is a modern and promising non-invasive technique that can visualize microanatomical structures in the skin. While its primary application is in melanocytic lesions, it should also be encouraged for the evaluation of inflammatory and infectious diseases, such as fungal infections. Its non-invasive nature, rapid results, and potential correlation with microbiological and histopathological examinations make it an underexplored yet valuable tool in dermatology.

Abstract N°: 3249

Cutaneous Phaeohyphomycosis - High Frequency Ultrasound and Confocal Microscopy as Diagnostic Tools

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Introduction & Objectives:

Phaeohyphomycosis is a fungal infection caused by dark-pigmented dematiaceous fungi, typically associated with immunosuppression. This case report aims to describe the use of high-frequency ultrasound and confocal microscopy as diagnostic tools in a patient with cutaneous phaeohyphomycosis. The objective is to highlight the utility of these dermatological technologies in aiding the diagnosis of infectious dermatoses.

Materials & Methods:

A 67-year-old male patient with a history of chronic systemic corticosteroid use presented with exuberant cutaneous nodules on the dorsum of the right hand for 4 years. The diagnosis was supported by high-frequency ultrasound, which allowed for the identification of hypoechoic cysts in the subcutaneous tissue. Ultrasound guidance was used for biopsy and cyst drainage. Additionally, confocal microscopy was performed on the drained content to examine the morphology of the infectious agents. Histopathological and microbiological analyses were conducted to correlate the findings.

Results:

High-frequency ultrasound revealed multiple hypoechoic cysts in the subcutaneous tissue of the affected hand. Confocal microscopy of the drained content showed blackened filamentous structures consistent with dematiaceous fungi. Histopathological and microbiological analyses confirmed the presence of fungi from the Fonsecaea complex, supporting the diagnosis of cutaneous phaeohyphomycosis.

Conclusion:

The use of high-frequency ultrasound and confocal microscopy proved valuable in the diagnosis of cutaneous phaeohyphomycosis. High-frequency ultrasound aided in identifying characteristic findings in the subcutaneous tissue, while confocal microscopy provided non-invasive visualization of the infectious agents' morphology. These dermatological technologies can assist in the diagnosis and management of cutaneous phaeohyphomycosis, a condition that can present with diverse clinical manifestations and pose diagnostic challenges.

Abstract N°: 3251

Cutaneous Centrofollicular Lymphoma and Ultrasound as a Diagnostic Tool

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Introduction & Objectives:

We present a case of a 43-year-old male patient with a suspected cutaneous lymphoma. The objective of this report is to describe the clinical, imaging, and histopathological findings of the lesion, emphasizing the role of high-frequency ultrasound (HF-USG) in the diagnosis and follow-up of cutaneous lymphomas.

Materials & Methods:

A 43-year-old male construction worker presented with a lesion on his left shoulder that had been present for 5 months. The patient reported a history of similar lesions on the right shoulder, anterior chest, and back, which had spontaneously resolved after a few months. Physical examination revealed an intensely vascularized reddish-brown nodule with papules on the surface, measuring 22 x 15 cm. HF-USG of the soft tissues was performed using an 18MHz transducer, and computed tomography (CT) was also obtained. Anatomopathological examination of a biopsy sample was conducted, and immunohistochemistry was performed to confirm the diagnosis.

Results:

HF-USG showed a heterogeneous tumor lesion infiltrating the epidermis, subcutaneous tissue, and adjacent muscles, with increased vascularization on superb microvascular imaging. CT revealed an infiltrative lesion inseparable from the rotator cuff and deltoid muscles, along with diffuse lymphadenopathy. The histopathological examination confirmed the diagnosis of primary cutaneous follicle center lymphoma (PCFCL), a large B-cell lymphoma with a follicle center phenotype rich in T lymphocytes. The Grenz zone, observed as a hypoechoic strip between the epidermis and affected dermis on HF-USG, was also noted.

Conclusion:

Cutaneous lymphomas pose a diagnostic challenge, and HF-USG has emerged as a valuable tool for their evaluation. In this case report, we demonstrated the utility of HF-USG in visualizing the tumor infiltration and the Grenz zone, which correlated with histopathological findings. HF-USG can aid in the diagnosis, monitoring, and treatment response assessment of cutaneous lymphomas, although histopathological confirmation remains essential. Further studies are needed to explore the full potential of HF-USG in the management of cutaneous lymphomas.

Abstract N°: 3257

Congenital Aplasia Cutis- Dermatoscopic And Ultrasonographic findings

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Introduction & Objectives:

Aplasia cutis congenita (ACC) is a rare condition characterized by congenital absence of the epidermis, dermis, and, in some cases, subcutaneous tissue. The use of high-frequency ultrasound (HFUS) for the diagnosis of ACC has not been described in the literature. This case report aims to present the HFUS findings of a diagnosed case of ACC and propose it as a diagnostic option for the disease.

Materials & Methods:

A male newborn, born at term (39 weeks of gestation), was referred on the first day of life for evaluation of a skin abnormality in the medial lumbar region observed at birth. The mother, 27 years old, had no comorbidities, medication use, or complications during prenatal care (negative serologies). The delivery was uneventful, with a normal Apgar score of 8/9 and a weight of 3555g. Clinical examination revealed an atrophic skin area in the lumbar region, with the absence of appendages, measuring 1.2 x 0.5 cm. Dermoscopy showed the presence of medium and small-caliber vessels only within the lesion. High-frequency ultrasound (HFUS) examination (Canon Toshiba, Aplio 800, 22MHz transducer) demonstrated a reduction in the thickness of the superficial dermis compared to normal skin thickness (2.1 mm vs. 1.7 mm at the site of the abnormality). Doppler imaging confirmed the presence of prominent vessels corresponding to the vessels observed on dermoscopy. The vertebral structures appeared anatomically normal, with the spinal cord ending at the level of L2 and a terminal filament thickness of up to 0.07 cm.

Results:

The diagnosis of aplasia cutis congenita (ACC) was made, with no associated abnormalities. The patient was discharged and will continue outpatient follow-up with a pediatrician.

Conclusion:

Aplasia cutis congenita (ACC) is a condition characterized by localized or generalized absence or scarcity of skin at birth. The use of high-frequency ultrasound (HFUS) as a diagnostic tool for ACC has not been previously described in the literature. In this case report, we utilized HFUS and described the findings, presenting a new non-invasive diagnostic option for ACC. Further studies are needed to enhance our understanding of HFUS in the diagnosis of ACC.

Abstract N°: 3315

Development of Artificial intelligence (AI)-assisted skin cancer diagnosis support software using smartphones for Koreans

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Introduction & Objectives:

The healthcare-related market for Artificial Intelligence (AI) is rapidly developing at an average annual rate of 45.8% (averaged over 5 years from 2019 to 2023) as AI technology is being introduced in the medical industry. While Korea has already researched AI-related skin tumors, our focus is specifically on skin cancer to develop AI for skin cancer differential diagnosis that can assist primary medical institutions in diagnosing and differentiating skin cancer. Unlike previous studies, this research specifically focuses on skin cancer by separating it into regions to account for the uniqueness of each location and enhance detection accuracy through image collection and analysis.

Materials & Methods:

We collected images using DSLR, dermoscopy, and smartphones, and for binary classification, we divided them into benign and cancerous lesions. For 4-class classification, we classified them into benign, basal cell carcinoma, squamous cell carcinoma, and malignant melanoma. We collected a total of 7,327 images and used the ResNet-152 architecture for the convolution layers. We configured the fully connected layers such that the size of the subsequent layer is halved during forward propagation, with the size of the topmost FC layer specified as the number of prediction labels.

Results:

In binary classification distinguishing between benign and cancerous lesions, a sensitivity of 83.4%, specificity of 90.3%, accuracy of 88.6%, and an AUC of 0.869 were confirmed. In the 4-class classification, an accuracy of 84.5% was confirmed.

Conclusion:

We plan to improve this accuracy by increasing the amount of data, introducing clinical information, and subdividing the classes. If further improvement is achieved, it could be helpful in assisting diagnosis at primary health care centers.

Abstract N°: 3374

How to perform high ultrasound examination of skin involvement among patients with systemic sclerosis – proposition of a unified protocol

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Introduction & Objectives:

fast and cheap method of skin assessment in systemic sclerosis is an area of extensive research. Established in 1979 Rodnan skin score is palpation based method used among clinicians. This method has some limitations, such as: examinators skills, subjective results, no standardization. Since the last few years researchers are exploring ultrasound based techniques as a possible tool for skin assessment among patients with systemic sclerosis.

Materials & Methods:

review of the literature and self-experience.

Results: proposition of elastography based skin imagining protocol among patients with systemic sclerosis. In the present article the authors propose a potential protocol to examine skin involvement among patients with SSc in order to obtain certain repeatability of results and findings (Figure 1). The authors suggest that in order to compare the results with each other researchers should apply the same protocol of examination; therefore, in this article the authors propose a unified protocol based on a literature review and personal experience.

Conclusion: We are presenting potential protocol of ultrasound based examination of skin involvement among patients with systemic sclerosis. The results suggested that only one measurement at the above-mentioned location could potentially replace the mRSS. Such shortening of US-based examination to only one or two locations could possibly provide a cheap and easy method for clinicians. In order to reach an international consensus, the authors argue for the necessity of use of the same protocol among all physicians treating patients with SSc. High-frequency ultrasonography can potentially surrogate the modified Rodnan skin score. There is a need for a unified examination protocol of ultrasound-based examinations. It is important to test which parameter is better to replace mRSS skin thickness or stiffness.

Abstract N°: 3409

Elastography as a possible useful method of assessment of skin involvement in systemic sclerosis

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Introduction & Objectives:

Scleroderma (Sc) is a connective tissue disorder associated with internal organ involvement, increased mortality, and unknown pathogenesis. It has been found that the more extensive the skin involvement the more severe internal organ manifestations and increased disability. The Rodnan skin score (RSS) is one of the established methods to examine skin thickness among patients with Sc. Due to RSS limitations, for instance, lack of detection of subclinical changes, a new tool is needed for the evaluation of Sc. In recent studies, shear wave elastography (SWE) has been examined as a potential tool to assess skin involvement through the evaluation of skin strain. Our aim is to verify whether elastography is a reliable method to examine Sc progression and possibly provide one useful site to perform the examination - as an easy, cheap, and reliable examination tool.

Materials & Methods:

Forty SSc patients were examined, and 28 healthy individuals were recruited for the control group. Among the patients and control group, skin thickness was assessed using the RSS and skin strain measurements using elastography in 20 body locations.

Results:

SWE in the right-hand finger can be treated as an important diagnostic indicator of the severity of Sc.

Conclusion:

SWE is a reliable method for evaluating skin involvement among patients with systemic sclerosis (SSc). Right finger measurements correlate positively with Rodnan's results and can be a predictor of the severity of SSc. This study found SWE to be a reliable method for examining SSc progression and possibly one useful site for the examination.

Abstract N°: 3426

Evaluation of the usefulness of clinical ultrasound for assessment of response to treatment in patients diagnosed with cutaneous lymphoma

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Introduction & Objectives:

Primary cutaneous lymphomas are a heterogeneous group of non-Hodking lymphomas without extracutaneous involvement at diagnosis, with clinical manifestations, biological behavior and prognosis varying according to the entity. TNM is used for staging (TNMB in the case of mycosis fungoides and Sezary syndrome), and clinical indices such as BSA or mSWAT are used to evaluate the degree of cutaneous involvement or response to treatment. However, these indices are subjective, and there may be interobserver variability and other biases in perception at successive visits. In addition, systemic lymphomas may have secondary cutaneous involvement.

Clinical ultrasound has proved to be a useful test for the diagnostic suspicion and follow-up of patients with cutaneous lymphomas, and is nowadays a technique used in routine clinical practice. It allows diagnostic approach by ultrasound pattern recognition, identification of cost-effective areas for skin biopsy, patient follow-up and ultrasound-guided infiltration. However, there is no standardized method of evaluating the response to treatment by ultrasound. Therefore, our objective is to evaluate the response to treatment by partial response, complete response, stable disease or progression by measuring the ultrasound thickness of the lesions.

Materials & Methods:

We present a prospective study carried out in our center, in patients diagnosed with primary cutaneous lymphoma or systemic lymphoma with cutaneous involvement in whom a new treatment was started, performing a clinical ultrasound to measure the thickness of the lesions and compare the response in visits every 3 months, in order to evaluate the response as complete, partial, stable disease or in progression.

Results:

We followed up 8 patients with cutaneous lymphomas of different types, mostly in tumor stage or with nodular lesions in which we performed ultrasound of the lesion before and after different types of treatment applied, in order to establish an objective evaluation of the response to such treatment, beyond the response shown by clinical images. After analyzing the patients included, we believe that it is especially useful in treatments with intralesional therapeutic infiltration and after surgical treatment of the lesion, in which the clinical visualization of the evolution may give rise to doubts. On the other hand, it is not so useful in lesions in plaque or patch stage, in which the difficulty of measurement decreases its reliability and therefore the profitability in these stages is limited.

Conclusion:

We propose ultrasound as an objective method to evaluate response to treatments in cutaneous lymphomas by measuring the thickness of cutaneous lymphoma lesions before and after treatment, as well as evaluating other variables such as which treatments are associated with greater response ultrasonographically.

Abstract N°: 3452

Ultrasound imaging of skin involvement in systemic sclerosis: a systematic review

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Introduction & Objectives:

Systemic sclerosis (SSc) is an autoimmune connective tissue disease characterized by microvascular damage, inflammation and expanded collagen accumulation contributing to fibrosis and skin stiffness. Classic features of SSc are: the fibrotic process of the skin and internal organs such as: lungs, heart, gastrointestinal tract, and others. The aim of this paper is review evidence on the application of ultrasound imaging of skin in patients with systemic sclerosis (SSc).

Materials & Methods:

The authors carried out a review of the literature via Pubmed MEDLINE database. The search terms were: skin imaging in systemic sclerosis, ultrasound skin imaging in patients with systemic sclerosis. The selection and analysis of articles were performed by two independent evaluators. The authors analyzed 10 studies characterizing 470 patients with systemic sclerosis.

Results:

The analyzed patients were young adults, mainly women. The described methods of ultrasound were: ultrasound elastography (7.14%), ultra-high-frequency (7.14%) and B-mode ultrasonographic imaging (21.43%), high-frequency ultrasonography (21.43%), shear-wave elastography (21.43%) and others (21.43%). Skin measurements reported in the analyzed studies were: skin ultrasound in all studies, skin thickness (8 studies), skin elasticity (5 studies), skin stiffness (2 studies), subcutaneous tissue thickness (1 study). Ultrasound measurements were compared to different types of scales and measurements used in the description of disease progression. The theory that ultrasound may be used in the clinical assessment of skin involvement in SSc was confirmed.

Conclusion:

To the best of our knowledge, articles currently reporting the use of ultrasound in skin imaging show interesting ideas and provide basis for further research. Skin involvement in SSc assessed with ultrasound should be compared to skin biopsy. It is necessary to develop guidance for conducting skin measurements using ultrasound in patients with SSc. Currently, skin imaging in SSc is of limited clinical use due to a variety of methods and the lack of a standard operating procedure. The analyzed studies suggested that high-frequency ultrasound provided a quantitative and reliable evaluation of dermal thickness in patients with SSc.

Abstract N°: 3454

The BCC-One-Stop-Shop-Method – in-vivo and ex-vivo margin mapping of basal cell carcinomas

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Introduction & Objectives:

In the present project the in-vivo and ex-vivo margins of basal cell carcinomas (BCC) were investigated by line-field confocal laser microscopy (LC-OCT) assisted by artificial intelligence (AI) in addition with dynamic optical coherence tomography (D-OCT) and for ex-vivo in comparison with confocal laser microscopy (CLSM). Here, the question should be answered whether a margin mapping of BCC with the new BCC-One-Stop-Shop method is possible by means of non-invasive diagnostics and artificial intelligence and therefore helps in reducing the number of steps needed for surgical clearance of the tumor.

Materials & Methods:

Patients eligible for Mohs Surgery with 1-3 lesions with clinically, dermoscopically or histologically confirmed measurable BCC were examined in vivo with LC-OCT and D-OCT and ex-vivo with LC-OCT and CLSM from May 2023 on. First the lesions were clinically and dermoscopically photo documented. The clinical and dermoscopic margins were coloured with pencils in four colours by the surgeon for the four directions (12 -3 -6 -9 o'clock) with a safety distance of 2 to 3 mm. Then dermoscopy images for each quarter of the BCC were captured and the four dermoscopy quarters were reconstructed for an overview and live colocation during LC-OCT images. LC-OCT images were performed of the centre (3D images) and margin mapping of the BCC in the four quadrants was conducted via the video function assisted by artificial intelligence (AI). After completion of LC-OCT imaging a final AI overlay can be seen on dermoscopy, highlighting areas with residuals in red color or clearance of the BCC in green color by AI. Then D-OCT measurement of the centre for confirmation of the BCC subtype and tumor thickness and of healthy skin was done. The patient was then transferred for surgery. Incisions at the four quadrants on the excised specimen were performed, pinned with coloured needles for the directions and transferred into NaCl. After cutting of the specimen with tumor lamellae, edges and base cuts (Tübinger Torte Technique) the ex-vivo LC-OCT measurement was performed. After use of fluorescent dye (acridine orange) the specimen was measured with the ex-vivo CLSM. Finally, the specimen was handed over to the histology lab for formalin fixation and preparation for comparative histological analysis.

Results:

The primary objective of the study was to compare the LC-OCT margin mapping results with the histopathological result on the first Moh's micrographic surgery (MOHS) cut quarter by quarter. The measurement was considered successful, if LC-OCT and histology showed the same result, a fail was declared if LC-OCT and histology had different results. Fails were detected especially when the BCC was located in a difficult to access area for imaging (like nose fold, ear fold, inner eye lid etc.) or if the mapping was interrupted, suspicious areas were missed. The ex-vivo LC-OCT results were also compared with the CLSM results. Descriptive results of the study can be presented.

Final statistical results will be ready after completion of the study.

Conclusion:

The overall aim of the study is to demonstrate that non-invasive imaging especially with AI-assisted LC-OCT allows the in-vivo and ex-vivo margin mapping of BCC visualizing BCC residuals or tumor clearance of all margins, thus providing an individual treatment option, reduction of surgical steps for each patient and therefore a prosperous one-stop-shop-method for BCC therapy.

Abstract N°: 3564

Applicability of shear wave elastography for the evaluation of skin strain in systemic sclerosis

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Introduction & Objectives:

The assessment of skin fibrosis is vital for the diagnosis and monitoring of treatment in the systemic sclerosis (SSc)-a severe autoimmune disease.

Materials & Methods:

We compared the efficacy of the shear wave elastography (SWE) and commonly used classic Rodnan skin score (RSS) in skin fibrosis assessment in SSc. The study included 40 SSc patients and 28 healthy individuals, with the exclusion of individuals with other skin/autoimmune diseases. Skin thickness using RSS and skin strain using SWE were assessed in the same 20 body localizations. Subjects' informed consent and the bioethics committee approval were obtained.

Results:

Elastographic skin strain correlated positively with both partial and overall RSS values, with strong positive correlation ($r \geq 0.75$) for hands and fingers localizations in particular. In SSc patients with normal RSS values, the elastographic strain was significantly higher than in healthy controls. Elastographic strain of fingers' skin evaluated in SWE was highly accurate for distinguishing SSc patients (sensitivity 0.897-0.923, specificity 0.929-0.964, positive predictive value 0.946-0.973, negative predictive value 0.867-0.900). SWE results were substantially more reproducible than those of RSS examination (intraclass correlation coefficients: 0.987 vs. 0.941).

Conclusion:

The elastography is a technique of skin fibrosis assessment through the evaluation of skin strain. The shear wave elastography is more reproducible and has higher sensitivity than RSS in the evaluation of skin condition in SSc, especially in case of changes non-detectable on physical evaluation, indicating it might become a useful tool in SSc diagnosis.

Abstract N°: 3566

Clinical and ultrasound features of a series of finger tumors.

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Keywords: finger; hand; nodule; tumor; ultrasound.

Introduction & Objectives: Finger tumors (FT) and tumor-like lesions are common complaints in dermatological practice. While most cases are easily identifiable through physical examination, some lesions can be millimetric, nonspecific, and difficult to distinguish with other imaging techniques like magnetic resonance, as occurs in FT. Ultrasonography (USG) has proven useful in such instances. This study aims to evaluate the clinical and ultrasound (US) characteristics of FT and the utility of USG for these types of lesions.

Materials & Methods: We conducted a retrospective, single-center, descriptive study, including patients with a single, localized nodular lesion on the fingers who underwent dermatological USG examination using high-frequency US probes (15Mhz and 20MHz) between January 2020 and April 2023. We collected demographic data and noted clinical and US features of the lesions.

Results: A total of 22 patients were included, 14 women and 8 men, with a mean age of 57 years (ranging from 32 to 85 years). More than half of the FT was in the distal phalanx (54.55%), followed by 27.27% in the adjacent distal interphalangeal joint. The majority (91.91%) were found in the 2nd, 3rd, and 4th fingers, with the third finger as the most common location (50% of the tumors). Three were subungual and two presented with onychodystrophy. One lesion was not clinically visible. More than a third of the lesions (8 out of 22) were painful. B-mode US features were variable, mostly hypoechoic or anechoic, well-defined, and smaller than 0.8 mm. Seven demonstrated vascularity on color Doppler, corresponding to 3 glomus tumors, 3 lobular capillary angiomas, one foreign body granuloma, and one fibrohistocytoma. The remaining FT were 8 mucoid cysts, 4 dermatofibromas, one tendon sheath fibroma, and an ill-defined area formed by calcifications in the setting of arthropathy. Of the total, 18 diagnoses were confirmed histologically, while 4 patients opted for US follow-up. USG modified the final diagnosis in over a third of the cases (8 patients) and facilitated echo-guided surgery in the non-visible lesion.

Conclusion: USG is a safe, accessible, inexpensive, and quick procedure that improves diagnostic accuracy and aids in the understanding of the relationship with adjacent structures. In our series, it modified the diagnosis in 8 out of 22 patients and negated the need for surgery in 4. It has also proven beneficial in determining and guiding the surgery of small tumors such as those located on the fingers that are neither visible nor palpable and that would not be well characterized by other imaging techniques, as occurred in one of our patients. There is a lack of literature discussing the use of 20MHz-frequency US probes or the correlation of clinical aspects of lesions. Therefore, further clinical-US studies with larger patient groups are warranted. We advocate for the use of USG in dermatology, particularly for FT.

Abstract N°: 3697

Clinical Presentation and Diagnostic Features of Onychomatricoma: A Case Report

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Introduction & Objectives:

Onychomatricoma is an infrequent, benign fibroepithelial tumor originating from the nail matrix. While the exact cause of onychomatricoma remains uncertain, the tumor has been associated with trauma and onychomycosis. The thumb, particularly on the dominant hand, is commonly affected. This report aims to describe the clinical, dermatoscopic, and sonographic features of a case involving onychomatricoma.

Materials & Methods:

We present the case of a 58-year-old man who presented with a two-year history of gradual nail dystrophy and painless symptoms on his right index finger. Initially misdiagnosed as a wart, the patient had received cryotherapy treatment without improvement. Physical examination revealed asymmetrical longitudinal thick yellow bands and overcurvature of the nail plate in the right index finger. There was no history of nail trauma or personal/family history of skin cancer or dermatological disorders. The nail was assessed using dermatoscopy and skin ultrasound.

Results:

Dermoscopy revealed perforations in the distal portion of the nail plate along with white longitudinal grooves. Ultrasound imaging (longitudinal view) demonstrated a hypoechogenic tumor affecting the nail matrix, finger-like projections represented by hyperechogenic areas, and reduced blood flow.

Conclusion:

The diagnosis of onychomatricoma is frequently delayed, as patients often delay seeking medical attention due to the tumor's slow growth and lack of pain in most cases. Moreover, the unfamiliarity of dermatologists with the clinical features of onychomatricoma contributes to underrecognition of this uncommon nail matrix tumor. Therefore, this report presents a typical case of onychomatricoma to aid dermatologists in recognizing its clinical features and promoting early detection of this rare condition.

diagnosis of onychomycosis: the utility of a immunochromatography strip test compared to culture.

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Introduction & Objectives: Onychomycosis has a high prevalence in our environment, with dermatophytes being the most frequent agent, responsible for tinea unguium. Definite diagnosis of dermatophytic onychia depends on techniques that are not always accessible (polymerase chain reaction) or that offer a delayed result (culture, histopathology). Treatment of tinea unguium requires systemic antifungals for extended periods of time, which can cause relevant adverse effects, so it is preferable to count with the diagnostic confirmation prior to starting the treatment.

A rapid detection technique for dermatophytes based on immunochromatography could be useful as screening for the diagnosis of tinea unguium, thus allowing an early start of treatment and a decrease in consultation visits.

The objective is to assess sensitivity and specificity of the rapid antigen detection strip-test, considering the culture as reference diagnostic technique.

Materials & Methods: Over a period of 12 months, 325 nail samples were collected from patients with clinical suspicion of tinea unguium. Each sample was simultaneously placed in culture and performed the strip-test. Patients with a positive result in the strip-test received treatment for tinea ungueum in that same initial consultation, while those with a negative result, were given a new medical appointment to check the serial cultures results and assess the need for treatment.

Results: The sensitivity and specificity of the rapid antigen detection strip-test against culture are 96.97% and 85.18% respectively.

Conclusion: Our findings conclude that the efficacy of the rapid antigen detection strip-test is comparable to the mycological culture for the detection of nail dermatophytes and therefore, it is a useful diagnostic technique for the screening of tinea unguium. It also allows a reduction in the number of visits to hospital as well as an early start of treatment.**

Abstract N°: 3932

Cell interactions in premalignant cutaneous lesions

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Introduction & Objectives:

At the cutaneous level, premalignant lesions such as keratoacanthoma, actinic keratoses and Bowen's disease are among the most important risk factors for developing squamous cell carcinoma, being the most commonly considered metastatic cutaneous cancer. Defining changes at molecular level and outlining signalling pathways in the early stages of the development of premalignant lesions, before their clinical manifestation, are important steps for understanding how the cellular response is modulated during carcinogenesis at this stage.

Materials & Methods:

Cutaneous fragments were collected through excisional biopsy with surgical knife, from 63 female patients clinically and histopathologically diagnosed with actinic keratosis, Bowen disease and kerato-acanthoma. Fragments of normal skin were obtained by the same harvesting method from perilesional areas, to constitute the control group. After identifying and characterizing the morphology features of these lesions, we conducted a correlated and comparative study of an association of molecules such as interleukin-6 (IL-6), tumor necrosis factor-α (TNFα), cyclooxygenase-2 (Cox-2), metalloproteinase-2 (MMP-2) using the ELISA and FRET techniques, considered much more sensitive and specific than the im-munohistochemical study.

Results:

Higher concentrations of TNFα, IL-6 and Cox-2 were found on the Bowen's disease and keratoacan-thoma lesions compared with the actinic keratoses. TNFα and IL-6 are also associated with increased levels of cyclooxygenase-2.The obtained results reveal that the molecular profile of the lesions at high risk of progression to invasive squamous cell carcinoma is defined by the inversely proportional correlation between MMP-2 expression and that of TNFα, IL-6, and Cox-2.

Conclusion:

Molecular changes significant for malignant transformation found in the early stages of cutaneous premalignant lesions, can be an important tool on assessing the evolution and management of these lesions. The present study emphasizes the existence of cellular phenotypic variability at the molecular level, indicating the importance of using molecular biomarkers both in the standardization of diagnostic algorithms and customization of therapeutic protocols.

Abstract N°: 4128

Dermoscopy, videodermoscopy, skin ultrasound and ex vivo fluorescence confocal microscopy for diagnosis of plaque psoriasis: A pilot study

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Introduction & Objectives:

Psoriasis is a genetic, immune-mediated skin pathology with complex pathogenesis involving interactions between the acquired and adaptive immune systems. Vulgar or plaque psoriasis is the most common form of the disease. The diagnosis is generally clinical, but the histopathological examination is mandatory for less obvious cases.

The aim of the study was to evaluate psoriasis plaques through non-invasive imaging techniques such as dermoscopy, videodermoscopy, skin ultrasound and invasive techniques like ex vivo fluorescence confocal microscopy and optical microscopy.

The objectives of the study were to identify disease-specific imaging models that support the clinical diagnosis and to establish correlations between invasive and non-invasive techniques.

Materials & Methods:

This was a prospective pilot study. A total of 28 treatment-naive plaque psoriasis patients were included. The lesions were evaluated with dermatoscope, videodermatoscope, skin ultrasound, ex vivo fluorescence confocal microscopy and optical microscopy.

Results:

We evaluated 28 psoriasis lesions from 28 treatment-naive patients with an average age of 59 years, of which 54.5% were male and 45.5% female. The most frequent dermoscopy pattern was of regularly distributed dotted vessels on an erythematous background (81.8%) with diffusely distributed white scales (100%). In videodermoscopy the most frequent pattern was of bushy vessels uniformly distributed on an erythematous background (72.7%). Skin ultrasound showed the presence of the hypoechoic band in the superficial dermis (100%) and hypervascularization (81.8%). Psoriasiform hyperplasia (100%), parakeratosis (100%), dilated capillaries in the papillary dermis (54.5%), and Munro's microabscesses (45.5%) with a statistically significant correlation with histology were all visible using ex vivo fluorescence confocal microscopy. The presence of dilated capillaries in the papillary dermis at confocal microscopy and the hypervascularization detected by Color Doppler were found to be statistically correlated ($P<0.05$). The hypoechoic band seen on ultrasonography and the lengthening of rete ridges seen on confocal microscopy also showed a statistically significant correlation ($P<0.05$).

Conclusion:

Non-invasive and invasive imaging methods have proven their usefulness in supporting clinical diagnosis. They can also be used in monitoring the therapeutic response and early identification of relapses.

Abstract N°: 4488

3D-Total Body Photography for the diagnosis of non-melanoma skin cancer in comparison to dermoscopy – A useful tool for monitoring high-risk patients and teledermatology?

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Introduction & Objectives:

Total body photography (TBP) leads to early detection of melanoma and is recommended for the monitoring of high-risk patients. There are patients with high risk for non-melanoma skin cancer (NMSC) like transplant patients who also have to be monitored regularly. The authors examined if 3D-TBP is also useful for diagnosis of NMSC.

Materials & Methods:

129 Patients with lesions suspicious for NMSC who had not yet had a biopsy received a 3D total body photography (3D-TBP, Vectra® WB360 (Canfield Scientific GmbH, Parsippany, USA)) and an examination of each lesion with dermoscopy after clinical examination.

Results:

129 patients (52 female, 77 male) with 182 lesions were included in the study. 158 lesions were examined histologically, including 108 basal cell carcinomas (BCC), 27 squamous cell carcinomas (SCC), 14 in situ SCC, 2 malignant tumors other than NMSC and 7 benign lesions. Lesions were localized on the head/neck (138), trunk (21) and limbs (23). Out of 182 lesions examined, 12 lesions were not visible. Reasons for the lack of visibility were locations such as the forehead or upper head under the hair, or apex of the nose. Two lesions were only visible as erythema in 3D-TBP, while on the photo of the patient file, the tumors were clearly identifiable. Sensitivity of 3D-TBP was lower than dermoscopy regarding BCC (72% vs. 79%), similar regarding SCC (74% vs. 74%) and higher regarding in situ SCC (54% vs. 36%). Specificity of 3D-TBP was lower than dermoscopy (81% vs 82%) regarding BCC, higher (87% vs. 84%) regarding SCC and lower regarding in situ SCC (88% vs. 94%). Diagnostic accuracy in 3D-TBP was lower than in dermoscopy (75% vs. 80%) regarding BCC, higher regarding SCC (85% vs. 82%) and lower regarding in situ SCC (85% vs. 89%). However, no difference in sensitivity or specificity was statistically significant for these 3 tumour entities.

The confidence of the physician did not correlate with localization (dermoscopy: p = 0.152, TBP: p = 0,059). If only lesions with high confidence in 3D-TBP were included in the calculation, diagnostic accuracy increased for BCC (sensitivity 88%, specificity 83%, diagnostic accuracy 86%, 40 BCC), SCC (sensitivity 92%, specificity 84%, diagnostic accuracy 86%, 13 SCC) and in situ SCC (sensitivity 0%, specificity 100%, diagnostic accuracy 0%, 3 in situ SCC).

Conclusion:

Overall diagnostic accuracy was only slightly lower in 3D-TBP regarding BCC and in situ SCC, but higher regarding SCC. Diagnostic accuracy increased if only lesions with high confidence were included in the calculation. Further studies are necessary to examine, if 3D-TBP is applicable for monitoring of NMSC and leads to improved management of lesions in patients with high-risk for NMSC.

Abstract N°: 4634

Personalized Melanoma Grading System: A Case Report of A Patient with Four Melanomas Detected over two decades with Evolving Whole-Body Imaging and Artificial Intelligence Systems

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Introduction & Objectives: High risk melanoma screening involves multiple modalities with the objective of achieving true negative examination results. Our goal is to define a low cost pathway for melanoma screening that minimizes false positive and negative events. New technologies must be tested in order to interpret their potential places.

Materials & Methods: AI lesion screening + genomic tape stripping detected severely dysplastic nevi but no melanomas in a 68 yo with four prior melanomas. Dermatoscopy of 251 hotspots identified with Total Body Imaging (Melanoscan®) from 2002 to 2023 classified with a 7-class model. The 5 highest scoring lesions underwent genomic tape stripping; 2/6 Prame positives were identified as severely dysplastic nevi. Seven benign lesions and four melanomas were excised between 2002 and 2023, and captured with Total Body Imaging (Melanoscan®). The number needed to treat (NNT) was 4/12 for melanoma. This is consistent with our previously published NNT for melanoma of 2.4. In 2021 we developed a 7 class CNN for 120,000 dermoscopy images obtained from 2008-2023 as a component of the Melanoscan system. We selected an optimal patient, a high compliance 21 year patient with a history of 4 melanomas. This retrospective analysis of the sentinel high-risk patient used the dermoscopy model and Melanoscan mapping, and the Chaos and Clues algorithm. The hypothesis that the highest scoring AI lesions were melanoma was tested by genomic tape stripping on 6 lesions followed by excisional biopsy on 2 Prame positive lesions, yielding complete excisions of 2 severely dysplastic nevi.

Results: Key—r:reticular, s:structureless, g:gray, p:pink, b:black, es:eccentric structures, trl:thick reticular lines, b:brown, pcd:peripheral clods and dots, pv:polymorphous vessels, IM:invasive melanoma, MIS: melanoma in situ

Case	Correlation	AI Scores	Chaos	Clues	Breslow/Diagnosis	Location	Genomic Tape Strip
1	Melanoma	-	-	-	3 mm/IM	Lower back (2002)	No
2	AI progression	0.48, 0.60,, 0.91	yes	trl,es,r,s,g,p,b	0.46 mm/IM	Left knee	No
3	AI constant	0.83, 0.84, 0.84	yes	trl,pv,s,g,p,b,	0 mm/MIS	Left back	No
4	New lesion	0.93	yes	trl,r,s,g,b,p	0 mm/MIS	Right earlobe	No
5	No correlation	0.75, 0.95, 0.94, 0.96	yes	g,pcd,pv,s,b,w,p	Severe atypia	Right thigh	LINC: Neg., Prame: Pos.; Tert: QNS..
6	No correlation	0.74	yes	g,pcd,b	Solar lentigo	Left knee	No
7	No correlation	0.96	yes	Trl	Severe Atypia	Upper back	LINC: Neg., Prame: Pos.; Tert: Neg.

Conclusion: AI classifier scores and genetic test results led to increased biopsies without increased melanoma detections. Melanoma size and thickness decreased over time with increased screening intensity. This may reduce the risk of false negatives and comes at the cost of increased resource utilization. Continued review of the relevance of AI classifier and genomic tape stripping are required. We observed a correlation between AI scores and Chaos and Clues evaluation.

Abstract N°: 4948

AI-based and LC-OCT-guided grading and follow up of actinic keratosis lesions under treatment with Tirbanibulin

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Introduction & Objectives: Cell atypia is the key feature in early actinic keratoses (AK). Moreover,** the histological PRO score (I-III) helps to assess the malignant potential of AK by grading the dermal-epidermal junction (DEJ) undulation. Line-field confocal optical coherence tomography (LC-OCT) provides non-invasive real-time PRO score and atypia quantification.** From LC-OCT imaging data,** training of an artificial intelligence (AI), using Convolutional Neural Networks (CNNs) for automated PRO score quantification of AK in vivo may be achieved. Tirbanibulin is a so-called microtubule inhibitor and mediates dual inhibition of Src kinase signaling and tubulin polymerization in keratinocytes, subsequently leading to apoptosis of mitotic cells and restriction of its downstream signaling pathways that promote cancer cell migration, proliferation, and survival.

Materials & Methods: CNNs were trained to segment LC-OCT images of healthy skin and AK. PRO score models were developed in accordance with the histopathological gold standard and trained on a subset of 237 LC-OCT AK images and tested on 76 images, comparing AI-computed PRO score to the imaging experts' visual consensus and histology. Keratinocyte atypia was assessed by CNNs using parameters such as nuclei volume and intercellular space. A cohort of 10 Patients were each treated for 2-3 well defined AK lesions (Olsen I-II) on the head and neck area using Tirbanibulin once each day for five consecutive days. LC-OCT lesion imaging was performed by obtaining 3D scans on day 0, 5, 8, 30, 57 and 90 (V0,1,2,3,4,5). Follow-up data on clinical response and LC-OCT-based quantification of PRO score, DEJ undulation, keratinocyte atypia, epidermal and stratum corneum (SC) thickness were collected for each follow-up date.

Results: All lesions included were clinically identified as either Olsen I (14/24) or II (10/24). The mean AKASI score before treatment was 3.7 (range: 7.9 - 1.2) and was reduced to 2.7 after treatment (range: 7.8 – 0.8). A significant SC thinning by 15 % ($p = 2.2 \times 10^{-3}$) was observed over the follow-up period, comparing V0 and V5. For the epidermal thickness, an initial increase was observed on V2, correlating well with a visible inflammatory response in LC-OCT imaging, visualized by a hyperreflective band and keratinocyte apoptosis. Upon completion of the follow-up period a total decrease of the epidermal thickness by 8% was found ($p = 0.035$). During the follow-up, the DEJ undulation index did significantly decrease by 15% ($p = 5.8 \times 10^{-3}$) and the keratinocyte atypia score did significantly improve from V0 to V5 by -26% ($p = 3.3 \times 10^{-4}$).

Conclusion: The findings suggest that CNNs are helpful for the automated grading and assessment of epidermal recovery in AK using LC-OCT. This may provide the clinician with a feasible tool to implement a more comprehensive follow-up strategy for AK by non-invasive means and to detect possible residues, recurrences and malignant transformation early on.

Abstract N°: 5019

Raster-Scan Optoacoustic Mesoscopy for Assessment of Skin Vascularization in Cardiac Patients: Preliminary Data

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Raster-Scan Optoacoustic Mesoscopy for Assessment of Skin Vascularization in Cardiac Patients: Preliminary Data

Introduction & Objectives:

Optical imaging is an ideal modality for noninvasive skin analysis because it uses non-ionizing radiation and safe energies while providing high contrast. Raster-scan optoacoustic scanning mesoscopy (RSOM) consists of a laser with a selectable wavelength according to the anatomical structure to be visualized and an ultrasound sensor connected to a computer. The laser light is directed non-invasively onto the skin, and ultrashort light pulses are sent to the area of interest. The absorption of the light causes the tissue to be heated locally for a short time (in the milliKelvin range), causing it to expand and emit pressure waves in the ultrasound range (photoacoustic effect). The skin surface is scanned in two dimensions by high-precision micro-steps, and the sound waves generated by the light pulse are recorded and stored on a computer. Special algorithms reconstruct three-dimensional optical images of anatomical skin structures in vivo with high spatial resolution (7-20 μm), allowing specific imaging of endogenous chromophores such as hemoglobin. Optoacoustic scanning mesoscopy allows the acquisition of images of >25 mm2 at a depth of 1-5 mm.

Materials & Methods:

In this study, we enrolled ten cardiologic patients diagnosed with heart failure from the cardiology unit of our hospital. Prior to imaging, the skin in the target area was cleaned and prepared to ensure optimal image quality. The RSOM probe was placed on the skin surface of the volar side of the right forearm, and raster scan imaging was performed. Imaging parameters, including laser wavelength, pulse energy, and imaging depth, were optimized specifically for the assessment of skin vascularization. The scans were compared with those of ten healthy volunteers to identify differences in skin microcirculation.

Results:

RSOM images provided high-resolution visualization of both superficial and deep skin microvasculature. Clear differentiation of major blood vessels such as arteries and veins was observed, allowing qualitative assessment of vessel density, tortuosity, and branching patterns. Importantly, the RSOM imaging procedure was well tolerated by all participants, with no adverse events reported.

Conclusion:

In summary, RSOM shows promise as a non-invasive imaging modality in patients with heart failure. Its ability to provide high-resolution images of tissue architecture and vascular changes has significant potential to improve the diagnosis, treatment planning, and monitoring of patients with heart failure. Further and larger studies are warranted to validate and establish the clinical utility of RSOM in this population.

Abstract N°: 5624

the use of in vivo reflectance confocal microscopy in juvenile xanthogranuloma: typical findings correlating with histopathology

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Introduction & Objectives:

Juvenile xanthogranuloma (JXG) is a common type of non-Langerhans cell histiocytosis, most frequently occurring in infants and young children. JXG mostly presents as a single or multiple pink-yellow to red-brown, dome-shaped papule or nodule on the head and neck, upper trunk, or extremities that usually show spontaneous resolution over time. It rarely occurs in adults, especially between 20 and 30 years of age, mostly presenting as solitary lesions.

The clinical differential diagnosis of solitary JXG lesions is broad and includes entities such as Spitz nevus, giant cell reticulohistiocytoma, xanthoma, mastocytoma, molluscum contagiosum, and congenital nevus. Dermoscopic findings may aid in clinical diagnosis, however, histopathological evaluation is sometimes necessary to distinguish JXG from other entities. Due to the benign nature of the JXG and its tendency to spontaneous remission, conservative treatment may be preferred, especially in childhood cases. Herein, we present a JXG in a young patient with its characteristic in vivo reflectance confocal microscopy (RCM) findings showing a high correlation with histopathology.

Materials & Methods:

A 23-year-old male presented with a 4 x 2,5 mm yellowish nodule on the proximal back. Dermoscopy, RCM imaging, histopathology, and immunohistochemistry was performed.

Results:

On dermoscopy, a setting sun appearance, defined by a central yellowish area surrounded by erythema was observed. On RCM a well-circumscribed area with thin epidermis and loss of rete ridges was observed. At the dermoepidermal junction, dermal papillae lacked a ringed-edged pattern. In the dermis, infiltration of multiple large round and ovoid cells with a foamy cytoplasm corresponded to xanthomatous histiocytes and multinucleated large cells with a a hyperrefractile cytoplasm, forming a peripheral rim corresponded to Touton giant cells was observed. On histology, loss of the rete ridges and well-demarcated, dense dermal infiltrate consisting of foamy histiocytes, Touton giant cells, and scattered mixed inflammatory cells were observed. On immunohistochemistry, the histiocytes were CD1a (-), S100 (-), and CD68 (+). With these findings, a diagnosis of JXG was made.

Conclusion:

RCM is a non-invasive tool providing in vivo imaging for real-time evaluation. RCM findings in JXG are similar to histopathology, and the presence of dermal infiltration of foamy cells and Touton giant cells aids to make the diagnosis of JXG on RCM. This finding supports the use of RCM as an alternative to biopsy in JXG cases.

Abstract N°: 5704

Superficial Acral Fibromyxoma: clinical, sonographic and histopathologic findings of an uncommon periungual tumor

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Introduction & Objectives:

Superficial Acral Fibromyxoma is a benign slow growing myxoid tumor of the distal extremities, that was first described in 2001. Since then, around 300 cases have been reported, most of them in the toes (45.8%) and fingers (39.1%), with a slight male predominance (61%).

Materials & Methods:

We present the case of a 49 years-old male, with no relevant medical history, who presented with a periungual tumour on his 5th right hand finger, that had been slowly growing over the past 5 years. The lesion was initially asymptomatic, but was lately causing pain due to repeated trauma. He also noted pain at palpation.

Results:

Ultrasound of the lesion with a 10-22Hz linear probe showed a round hypoechoic lesion with well-demarcated borders and a slight increase in perilesional Power Doppler signal, with no signs of internal vascularization.

The lesion was surgically removed. Histologic examination of the lesion showed a well-demarcated but not encapsulated proliferation of spindle cells embedded in a loose stroma. Neoplastic cells were negative for smooth muscle actin (SMA), S100 and claudin, while only positive for CD34, CD99 and vimentin. The histology also showed an intense dermal mucin deposition.

With these findings, a diagnose of Superficial Acral Fibromyxoma was made, and the patient was set for follow-up, due incomplete excision with positive surgical margins, with no signs of recurrence in the next 6 months.

Conclusion:

SAF is a benign fibrohistiocytic tumour that typically grows in acral surfaces (mostly fingers). There have been no reports of malignant transformation or metastasis to date, but a few cases of local recurrence have been described after incomplete resection. Although rare, it can also affect the nail apparatus or cause erosion of the underlying bone. The differential diagnosis should include other benign myxoid lesions with spindle-shaped cells (mucous cyst, superficial angiomyxoma), malignant myxoid lesions with spindle-shaped cells (low-grade fibromyxoid sarcoma, myxofibrosarcoma or myxoid dermatofibrosarcoma protuberans), and other acral neoplasms such as digital fibrokeratoma, sclerosing perineuroma, periungual fibroma, and cellular digital fibroma.

Abstract N°: 5793

Effortless disappearance of a painless pretibial mass

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Introduction & Objectives:

Muscle herniation, referred to as myofascial defect, occurs when a muscle protrudes through the surrounding fascia. Being relatively uncommon, this pathology has received limited attention in dermatological literature. It is crucial for clinicians to possess the skills to accurately diagnose and treat this condition, distinguishing it from other similar pathologies like varicosities, lipomas, hematomas, fibromas and other soft tissue tumours. Making the correct diagnosis will prevent unnecessary skin biopsies and alleviate potential psychological distress caused by misdiagnosing a more severe condition.

Materials & Methods:

We present a case of a 30-year-old sportsman who was refferred by his family physician for a localized painless swelling over his right anterior shin for almost 10 years, more evident during intense physical training and in weight bearing position. There was no numbness, tingling or weakness in the lower extremities. His medical and social histories were unremarkable.

Plain film imaging was performed to investigate the possibility of a fracture and a thorough neurovascular examination conducted before presentation showed no abnormalities.

Clinical evaluation revealed a 3 cm swelling in the tibialis anterior muscle, which decreased when lying down in a supine position. On palpation, a firm, painless hernia area of approximately 2 cm was noticed. When assuming a Fencer's lunge position, which places additional strain on the tibialis anterior muscle, the localized bulge increased.

The diagnosis of tibialis anterior muscle hernia was suspected, favored by increased intracompartmental pressure resulting from excessive muscular exertion and exercise.

Ultrasonography confirmed the presence of a 2 cm hypoechoic lesion in the transverse plane of the tibialis anterior muscle, indicating a disruption in the surrounding fascia.

Results:

The patient was advised to pursue conservative management for this condition, with the option of surgical referral if significant changes in symptoms did not occur within a month.

Conclusion:

Muscular hernia, characterized by the muscle protruding through the surrounding fascia, is an uncommon clinical finding, most commonly misdiagnosed as varicosities, lipoma, hematoma, or fibroma. The medical literature has reported approximately 200 cases of extremity muscle herniation, with the tibialis anterior muscle being the most frequent. The typical change during exercise, reduction or disappearance when in a supine position, should lead to the correct diagnosis, confirmed by dinamic ultrasound, the current gold standard test for diagnosis.

Abstract N°: 5874

A multilobulated nodule of a cesarean section scar : Think of cutaneous endometriosis

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Introduction & Objectives:

Endometriosis is a condition where endometrial-like tissues grow outside the uterus, causing bleeding and thickening with each menstrual cycle . It affects 10-15% of women of childbearing age. Cutaneous endometriosis is divided into primary and secondary forms, with the former resulting from spontaneous changes in specific tissues under unknown factors, and the latter caused by iatrogenic factors.Abdominal wall endometriosis is more common in women who have had previous cesarean sections, as the transplantation and implantation of endometrial tissue during the procedure can promote scar endometriosis. . The incidence of secondary cutaneous endometriosis is about 3.5% in patients who undergo gynecological surgery and about 0.8% in women with a previous cesarean section. Due to its varied presentation, such as pain, discoloration, and swelling around a Pfannenstiel skin incision, scar endometriosis often leads to a deferred diagnosis and unnecessary referrals. We report a case of cutaneous endometriosis one year after a cesarean section scar .

Materials & Methods:

We report the case of a 35-year-old patient presenting a cutaneous endometriosis on a caesarean section scar. The patient was examined by a Dermlite 4 dermoscope and the diagnosis was confimed by histology.

Results:

We report the rare case of a 35-year-old woman seen in consultation for a painful lower abdominal multilobular nodule with skin discolorations at and around the abdominal incision site. She was a healthy-looking woman who underwent two natural deliveries ,then had an emergency cesarean section 3 years ago for preterm delivery with breech presentation .After an unremarkable postpartum follow-up,she started having a painful growing nodule on the left side of the incision 2 years after the surgery. She indicated that the pain followed a cyclic pattern every month for the previous few months, often accompanied by red-colored fluid coming from the incision site. Physical examination revealed a non-mobile, painful multilobular moderately pigmented nodule, of approximately 2×3 cm at the incision's left lateral border.Dermoscopy showed reddish areas separated by fibrous septa.A color Doppler ultrasound evaluation revealed the presence of an irregular hypoechoic solid mass measuring 2x1.3x2.2 cm with Internal vascularity. An excision was ordered confirming the diagnosis of cutaneous endometriosis. The patient was referred to gynecology to look for a pelvic location of her endometriosis.

Conclusion:

While ultrasound, medical history, and examination can aid in the diagnosis of cutaneous endometriosis, the definitive diagnosis is only possible through pathology and the surgical excision of the endometriotic tissue is a prompt and effective treatment. The growing rate of cesarean sections has also increased the likelihood of cutaneous endometriosis being discovered, emphasizing the need for education to increase awareness among obstetricians and dermatologists.

Abstract N°: 5916

Evaluation of diagnostic accuracy with reflectance confocal microscopy in novice observers.

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Introduction & Objectives:

Reflectance confocal microscopy (RCM) is an imaging technique that allows in vivo diagnosis and is used primarily for the study of skin cancer. However, there are few specialists trained in the technique and there are few studies that evaluate the diagnostic accuracy of RCM in novice observers.

Materials & Methods:

For this purpose, a prospective observational study was performed at Hospital Universitario 12 de Octubre during 1 year in which 175 skin lesions with clinically/dermoscopically equivocal diagnosis were consecutively analysed.

These lesions were analyzed by a main observer with less than 1 year of experience in RCM, a group of novice observers with no experience in the technique as well as by a group of experts (with more than 5 years of experience in RCM) and analzed histopathologically by a dermatopathologist whose diagnosis was established as the gold standard. During the study the novice observers were trained in the analysis of the technique.

Results:

The main observer showed a very high concordance (84%) with the results given by the expert observers. The use of the technique improved diagnostic confidence and modified management in up to 38% of the lesions. In this observer, histopathological accuracy with RCM evolved throughout the study with a significant improvement in its evolution. As a result, the sensitivity and specificity of the technique in the detection of malignancy was 96.8% and 89.3% (100% and 92.3% for melanoma, respectively).

For the group of novice observers, in the clinical analysis of lesions, the novice observers showed a 46.9% accuracy rate, which was increased using MCR up to 57.3%. This technique also increased diagnostic confidence and modify management in 28% of cases. These observers showed a sensitivity of 62.4% and specificity of 87.9% for the diagnosis of melanoma. Similarly, when determining malignancy with the technique, they showed a sensitivity and specificity of 71.4% and 82.4% respectively.

Conclusion:

With basic training, RCM improves diagnostic accuracy and diagnostic confidence even in novice observers.

Abstract N°: 6074

Preoperative assessment of mucosal vulvovaginal melanoma margins using in vivo RCM

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Keywords: Vulvar Melanoma, Confocal Microscopy, Melanoma recurrence, Dermoscopy, Margin assessment.

Case presentation:

We present a 68-year-old woman undergoing periodic follow-ups in our dermatology department with a history of long-standing mucosal vulvovaginal micro-invasive melanoma, treated years ago with wide local excision but without clarity on the final state of the margins. In a routine skin examination follow-up, we observed new blackish-brown pigmented macules on the anteroposterior aspect of the vagina, the posterior third of the vestibule, and the periphery of the urethra. Dermoscopy and in vivo reflectance confocal microscopy (RCM) examination suggested the presence of recurrent melanoma. An incisional biopsy was performed, and histopathological analysis confirmed it. Subsequently, tumor board decided on partial resection of 1-1.5 cm of the distal urethra and partial vulvectomy, with the initial marking of the margins within ivRCM. The final biopsy report after the surgery showed mucosal lentiginous melanoma with micro invasion and clear surgical margins.

Discussion:

ivRCM it's a novel non-invasive imaging technique that allows the assessment of different skin tumors. Mucous membranes are easily accessible for examination thanks to the handheld device. In addition, they are particularly suitable for ivRCM examination because of their thin or absent cornified layer and thin epithelium. This allows for exploring deeper tissue levels with better-detailed architectural and cellular morphology visualization.

Vulvar melanosis and melanoma are often multifocal or large-pigmented mucosal lesions. Therefore, ivRCM, in conjunction with dermatoscopy, allows analysis of the whole lesion identifying the most significant areas to be biopsied or margin mapping before wide excision or Mohs surgery. Also, it will enable performing non-invasive monitoring of potential recurrences.

In the case of suspected local dissemination to the urethra, ivRCM can also help detect atypical cells, even when no pigment is visible under clinical or dermoscopic inspection.

Conclusion:

ivRCM, as a complementary imaging technique to dermoscopy, can help us to differentiate malignant and benign pigmented lesions of the vulvovaginal mucosa. In addition, it allows us to establish the area to perform biopsies when there are no apparent pigmented lesions or when they are multifocal. Finally, once the diagnosis is confirmed, we can perform a pre-surgical mapping to guide wide excision or Mohs surgery.

Figure 1.

A. Dermoscopy revealed a nonspecific pattern characterized by structureless**polychromatic** areas that combine brown, gray, blue, and white colors. Also, some irregular brown globules and thin, light brown reticulated lines were observed.

Figure 2.

B. Individual RCM image (500x500 µm) showed an atypical "honeycomb" pattern (blue arrowheads) and roundish-edged papillae (red asterisks) of the lamina propria grouped in small clusters separated by broad interpapillary hypo-refractive areas. In addition, some papillae are discontinuously surrounded by a rim of atypical hyper-reflecting roundish and dendritic cells (red arrows).
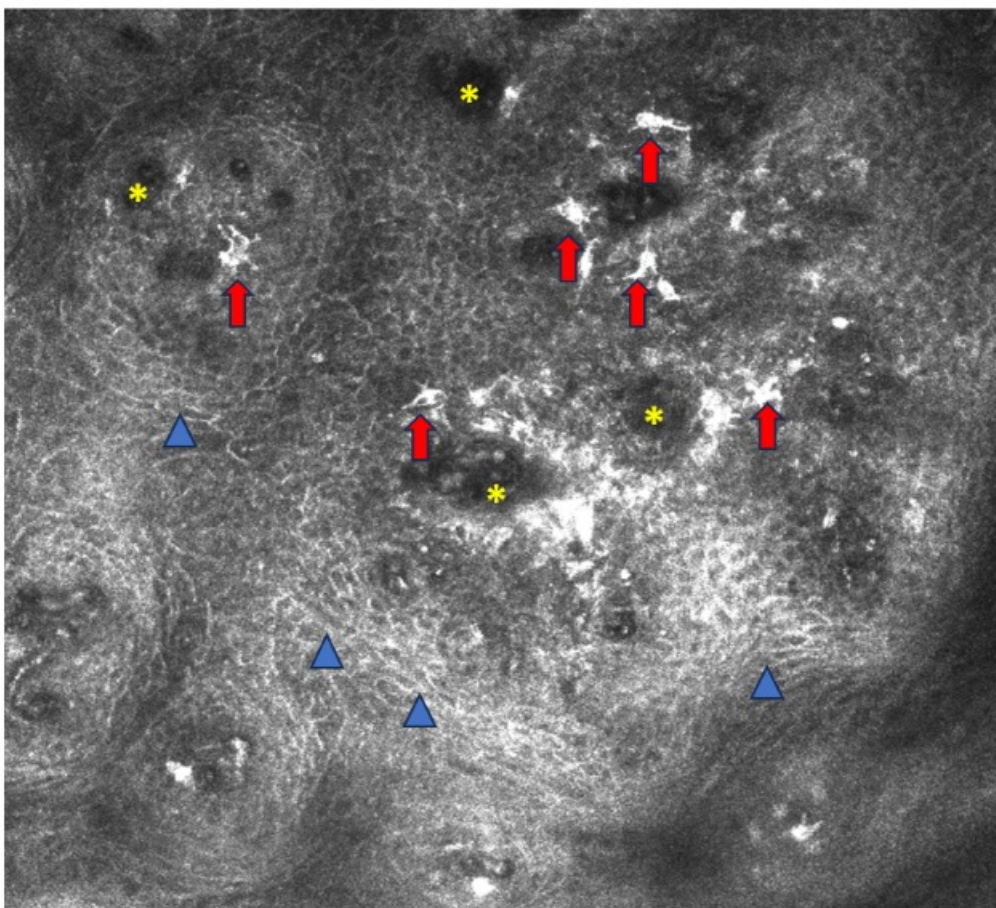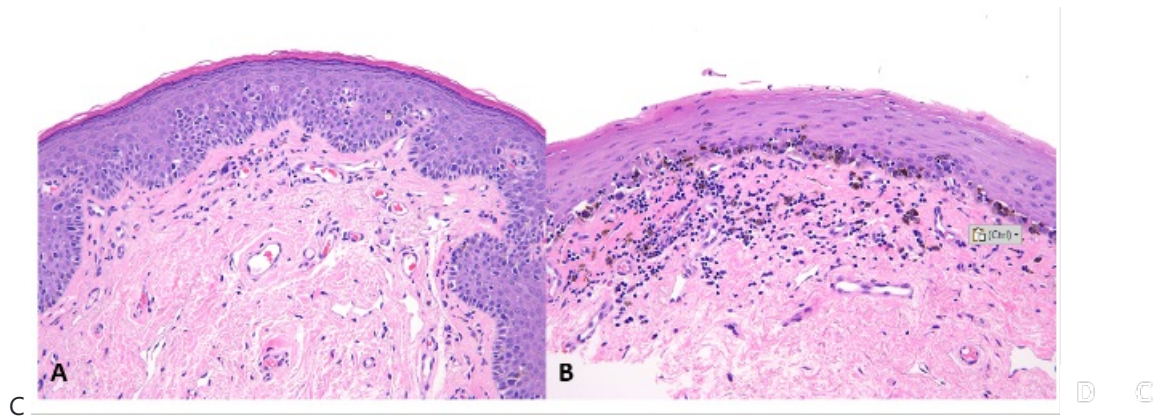

Figure 3.

C: H&E (20x) Figures A&B show junctional lentiginous proliferation of atypical melanocytes with hyperchromatic and pleomorphic nuclei, some above the basal area (A). Lymphocytic infiltrate and melanophages are present in the chorion (B).

D

C

Abstract N°: 6371

The use of state-of-the-art deep learning techniques for skin cancer diagnosis based on dermoscopy

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Introduction & Objectives:

Over the years, several techniques have increased the accuracy of skin cancer diagnosis, such as dermoscopy, confocal microscopy, optical coherence tomography, electrical impedance spectroscopy and, most recently, the artificial intelligence (AI).

The usage of 'thinking' computer systems in healthcare is steadily expanding. In dermatology, a specialty where imaging is crucial, deep learning algorithms have been able to diagnose and analyze severity of various skin diseases thorough images, with results similar to or better than those of trained dermatologists.

This work presents the results of the application of convolutional neural networks (CNN) and Vision Transformers (ViT), state-of-the-art deep learning techniques, in the diagnosis of melanoma and keratinocyte carcinomas.

Materials & Methods:

A state-of-the-art AI model was developed by initially pre-training it on a substantial dataset of dermoscopic images provided by the International Skin Imaging Collaboration (ISIC) archive (N=41926; of which 6289 were used for test). This established the model's foundation. To further refine and optimize its performance, we fine-tuned it using dermoscopic images from our own dermatology department (N=1765; consisting of 925 melanocytic nevi, 160 melanomas, 236 basal cell carcinomas, 24 squamous cell carcinomas, 10 dysplastic nevi, 38 actinic keratosis, 284 seborrheic keratosis or solar lentigos and 88 other benign lesions; of which 442 were used for test), with biopsy-proven diagnoses when necessary.

For the application, three types of models that share the same stages were developed: one of them is a binary classification to discriminate between cancerous and non-cancerous lesions, while the other two classifies malignant and benign images into different classes.

For the development of these models, we explored the most advanced architectures in the field of deep learning, including pre-trained convolutional neural networks (CNNs) and Vision Transformers. These architectures have revolutionized the field of computer vision, enabling more accurate and efficient analysis of skin lesions.

Results:

Our model achieved a diagnostic accuracy in detecting melanoma and keratinocyte carcinoma of 92,98%, with a specificity of 93,84% and a sensibility of 90,59%. The area under the curve was 0,97. The negative predictive value was 96,51% and positive predictive value was 84,12%.

Conclusion:

By combining advanced convolutional neural networks with Vision Transformers and applying the transfer learning technique, it sought to develop highly effective and accurate AI models for the classification of skin lesions in various conditions and contexts, improving the detection and diagnosis of skin cancer.

The integration of AI could reduce diagnostic delays and improve patient outcomes by expediting accurate diagnoses. It also has the potential to democratize access to specialist-level diagnostic capabilities in underserved regions, as it removes the geographical and economic constraints of traditional dermatological consultation.