Broadening our horizons in dermatology
8th Skin Academy Symposium
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Abstract Book
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Salvador González / Eggert Stockfleth
Eggert Stockfleth is Director and Chair of the Department of Dermatology at the University of Bochum. He gained his medical degree in 1991 from the University of Hamburg and since then has held positions at a number of universities and institutions both in Germany (among others, the German Cancer Research Center, Heidelberg) and the USA. Eggert joined the University of Kiel in 1996 and in 1999 was made Consultant of Dermatology, Venereology and Allergology. In 2001, Eggert became University Professor at Charité University Medical Center Berlin. Between 2004 and 2014 he was the Head of the Skin Cancer Center Charité and since 2009 he was also the Vice-chairman of the Department of Dermatology, Venereology and Allergy.

Eggert Stockfleth has been awarded two grants from the German Cancer Aid (Deutsche Krebshilfe) and received an EU grant for the increase of Skin Cancer Awareness. He is member of a number of professional associations, including the Berlin Society of Dermatology, the German Society of Dermatology, the Hamburg Dermatology Association, the German Cancer Association, the German Dermatology Association, the European Academy of Dermatology and Venereology, and the European Dermatology Forum. He is also the former European President of Skin Care in Organ Transplant Patients Network (SCOPE). Furthermore, he is the Head of the European Skin Cancer Foundation (ESCF), founded in 2008. Moreover, Professor Stockfleth is project coordinator of EPIDERM (European Prevention Initiative for Dermatological Malignancies).

Eggert’s research focuses on: dermato-oncology; HPV-associated skin and mucosal skin tumours; skin tumours in organ transplant patients; general dermatology; apoptosis regulation; skin carcinogenesis; immunology; tumour immunology; and molecular biology of skin tumours (melanoma, cutaneous lymphoma, cutaneous squamous cell carcinoma). His research on dermatology, oncology and particularly skin cancer, has been extensively published in peer-reviewed journals. He acts as referee for many different journals including Journal of Infectious Diseases, International Journal of Cancer, Journal of Investigative Dermatology and The Lancet.
Chairpersons’ welcome

8th Skin Academy Dermatology Symposium
Broadening our horizons in dermatology

Dear Colleagues and Friends,

As chairpersons of the symposium, it is our pleasure and privilege to welcome you to Barcelona. The Skin Academy Symposium is a highly regarded and established platform for medical education and we thank the European Skin Cancer Foundation and Almirall for their support.

It is also a great opportunity for clinicians and researchers to interact and learn from one another as we collectively aim to ‘broaden our horizons in dermatology’.

As some of you may know, we are fortunate to work internationally in both Europe and the United States of America. We feel that we can all learn a lot from opening our minds to international perspectives, and we are sure our eminent faculty of global experts in dermatology will help us to do this over the next two days, which we hope will be enjoyable and insightful for you.

On Saturday, the symposium will cover the fundamental aspects of diagnosis and management of actinic keratosis and field cancerization, the pathogenesis and management of atopic dermatitis and scalp psoriasis, epigenetics, new trends in paediatric dermatology and innovative technologies in dermatology. On Sunday, we will learn more about the clinical application of epithelial stems cells, squeezing topical corticosteroids in dermatology and how dermoscopy can help in the differential diagnosis of inflammatory lesions. We feel confident that the scientific programme will be very interesting and highly relevant to your clinical practice.

We feel fortunate to serve as chairpersons of this event; it is an exciting task and we look forward to seeing the results of our scientific and clinical discussions. We hope that you will find this symposium academically fulfilling and that you will feel professionally enriched by the close of this event!

Thank you for joining us here in Barcelona and for actively participating in the discussions ahead. We look forward to meeting and chatting with you.

Best regards,

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AK is classified as an intraepidermal proliferation of atypical keratinocytes (which is exactly the same definition as for carcinoma in situ). The morphology of the cells present in AK and invasive squamous cell carcinoma is identical and both also show similar patterns of gene mutations, including p53 tumor suppressor gene. Consequently AK represents an early stage of a carcinoma capable of progressing into an invasive carcinoma. We prefer for terminology the designation carcinoma in situ, type actinic keratosis using it with caution when communicating with patients and making clear that we are treating a chronic disease.

The central role in the pathogenesis of AK plays long-term exposure to UV-radiation (UV-B), which can lead to direct DNA damage causing cyclobutane pyrimidine dimers and pyrimidine-pyrimidone 6,4-photoproducts formation. As a result the function of tumor suppressor proteins such as p53 can be suppressed leading to a clonal expansion of keratinocytes into AK.

AK is the most common neoplasia in humans with the highest prevalence in Australia (60% > age of 40 having AKs). The clinical features are characterized by ill-defined scaly lesions on a red-based area, damaged severely by sun light. It is important to differentiate AK from other skin tumors. Recently technological advances have created imaging tools to improve the diagnosis of AKs. The most promising approach is confocal laser scanning microscopy, a non-invasive method (‘optical biopsy’), which can be used as a prescreening and follow-up diagnostic technique before and after treatment.

Risk factors for the development of AK include cumulative sun exposure, fair skin type, advanced age and male gender.

Histopathology reveals in the lower half of the epidermis keratinocytes with hyperchromatic, pleomorphic nuclei, dyskeratotic cells and mitotic figures (AK I, AK II). Involvement of the entire thickness of the epidermis is defined as fully developed squamous cell carcinoma in situ (AK III).

Data of the risk of progression of AK into invasive squamous cell carcinoma are not reliable and difficult to determine. But it is obvious today that both, AK and invasive squamous cell carcinoma, are phases in the evolution of one continuous carcinogenic process.

AKs represent a dynamic but chronic neoplastic disease with an extremely rare chance of spontaneous regression and the risk for developing invasive squamous cell carcinoma. Adequate treatment is therefore necessary, focusing not only on the primary tumor (single or multiple AKs) but also the field (concept of field cancerization).
References


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Notes
Josep Malvehy has been a Consultant Dermatologist and Director of the Melanoma Unit at the Hospital Clinic of Barcelona, since 2003. He is also a consultant of the Memorial Sloan Kettering Cancer Centre, New York, since 2013. He is the leader of the ‘Technology group’ of the International Skin Imaging Collaboration Group and consultant of the Technical Committee of the Spanish Association Against Cancer. He is principal investigator and member of DIAGNOPTICS, a European consortium working in new photonic technology for diagnosis.

Josep Malvehy’s main field of expertise is skin tumours with his main interests lying in diagnosis and treatment of malignant neoplasms of the skin (melanoma and non-melanoma skin cancer). He is Investigator of the IDIBAPS (Institut d’Investigació August Pi i Sunyer). Particular areas of his research and innovation include: non-invasive techniques of skin cancer diagnosis (dermoscopy, digital follow-up, confocal Microscopy, OCT, HD-OCT, impedanciometry, spectroscopy); genetics of melanoma; skin cancer susceptibility; skin carcinogenesis; teledermatology; and social networking in medicine.

Josep Malvehy has authored more than 200 scientific publications in international journals and more than 30 book chapters; he is also the editor of 3 books in diagnostics of skin cancer. He is or has been the main investigator of competitive research projects, with a total funding of more than 7,000,000 Euros; he has been the principal investigator of several medical trials in diagnostics and treatment of skin cancer. Josep has been the Chairperson of more than 10 international courses and conferences, including 7 World Melanoma Congresses and ‘Professor in Skin Cancer’ courses (more than 250 lectures since 1998). He has also lectured at both international conferences (more than 140) and national conferences (more than 110).

Josep has been Professor of the European Academy of Dermatology and Venereology since 2003, and Professor of the American Academy of Dermatology, since 2004.

New evidence from new technology for field cancerisation treatment

Patients with actinic keratosis (AK) usually have clinical and subclinical lesions that co-exist across large areas of sun-exposed skin. In sun-damaged skin of these patients subclinical lesions correspond to field cancerisation. AK and subclinical lesions are part of a disease continuum with risk to progress into invasive squamous cell carcinoma (SCC). In clinical practice and in research conventional biopsy sampling together with histopathological analysis of the excised tissue has been during the last decades the gold standard for the diagnosis and the study of the pathophysiology of this disease. Nowadays a number of non-invasive technologies have been introduced in dermatology for the study of skin tumours. This approach has the great advantage of the investigation of disease across large fields of skin and over time with a revolution in the assessment of changes in the tumours and response after the treatment. Modern imaging technologies such as fluorescence, reflectance confocal microscopy (RCM) and high-definition optical coherence tomography (HD-OCT) provide high-resolution images of the skin. RCM and HD-OCT techniques can be used to study the changes that characterise AK with a good histopathological correlation. They can also identify the presence of subclinical lesions and noninvasively monitor the effects of AK treatments on both subclinical and clinical lesions over time. Both RCM and HD-OCT have revealed a new dimension of field of cancerisation by the observation in vivo of the architecture and cellular changes that characterise both clinical and subclinical lesions.

As an overview, the non-invasive assessment was used for the precise monitoring of changes in the skin before and after topical treatment in a selected area with AK and field cancerisation.
References


Notes
Rolf-Markus Szeimies is Head of the Department of Dermatology and Allergology at Klinikum Vest, Academic Teaching Hospital of Ruhr-University, in Recklinghausen. Rolf-Markus studied medicine at the University of Munich and received his M.D. in 1989; he did his specialty training in dermatology at the Universities both in Munich and Regensburg. From 1996 to Oct 2009 he held a position as Senior Lecturer at the Department of Dermatology, Regensburg University Hospital.

His Ph.D. thesis was accepted in 1997 for his research in topical photodynamic therapy in dermatology. At present, his main research interests are in dermatoncology, the use of lasers in dermatology and aesthetic dermatology, and photobiology, especially photodynamic therapy (PDT) and UV treatment of patients with atopic eczema and psoriasis vulgaris. Rolf-Markus Szeimies has published more than 200 articles in peer-reviewed journals and over 40 chapters in books. He is member of national and international guideline committees for the treatment of non-melanoma skin cancer and PDT. Rolf-Markus is currently Vice-President of the European Society for Photodynamic Therapy in Dermatology.

A practical approach to AK - sharing our patients’ experience

The proportion of diagnosed and treated actinic keratoses (AK) in Germany is constantly rising: at present the prevalence reaches 1.7 million new cases per year which corresponds to a prevalence of 2%. Since AK represents a form of an early intraepithelial squamous cell carcinoma, immediate therapy is required.

The topical application of a low-dose 5FU-solution (0.5%) in combination with 10% salicylic acid as a lacquer has been recently marketed for lesion-directed AK therapy (Olsen types I and II). In the clinical trials performed prior to registration, high clearance rates were observed (72% on histological base), and total lesion area reduction was more than 90%. Clinical outcome by patients’ assessment reached 93.2% for very good/good efficacy.

However, there is always the discussion that even the best controlled clinical trials with high patients’ surveillance do not represent “real life”, i.e. patients’ adherence to therapy. Therefore a large post-marketing non-interventional study was conducted in Germany, which involved 1,051 patients in 212 dermatology offices and clinics. The mean numbers of AK (face and scalp) was 4.1 (mean age 73.8 yrs, male preponderance (69.8%)). Severity of AK was mainly Olsen type II (73.3%). 5-FU/SA lacquer was mainly applied once daily (96.6%). Participating dermatologists were told to document the clinical course of the lesions in relation to treatment duration, safety and tolerability, patients’ satisfaction and practicability in daily use.

During the treatment period the mean number of AK was reduced by 55.9% to 1.8 lesions per patient. At the follow-up visit 8 weeks after discontinuation of 5-FU/SA application, AK reduction was further increased to 69.7% and only 1.2 AK lesions per patient were still recognized. Interestingly, almost 50% of patients reached this therapeutic goal already within less than 6 weeks (recommended application duration 6-12 weeks). Subgroup analysis revealed even in patients receiving treatment for less than 4 weeks a lesion reduction of 68.5% (endpoint of tx plus 8 weeks). Both efficacy (89%) and safety/tolerability (87%) were rated as very good/good by dermatologists, and the vast majority of patients reported an excellent manageability and convenience.

In conclusion, the “real life” trial experience is not only in line with the results of the phase-III clinical trial, but also demonstrates the high efficacy of 5-FU/SA in the lesion-directed treatment of AK, even when the application time fell well below the recommended 6-12 weeks.
Reference

Notes
Amy Paller is the Walter J. Hamlin Chair and Professor of Dermatology, Professor of Pediatrics, and Principal Investigator of the NIH-funded Skin Disease Research Center at Northwestern University’s Feinberg School of Medicine. She received her undergraduate and graduate degrees from Brown University and her medical degree from Stanford University. She then completed residency training in both pediatrics and dermatology at Northwestern University and her postdoctoral research fellowship at the University of North Carolina. Amy served as Chief of Paediatric Dermatology at Northwestern’s Children’s Hospital and currently is Chair of Northwestern’s Department of Dermatology. She has served on the Board of the American Academy of Dermatology and American Dermatological Association, and acts as President for and sits on the Board of Directors for the: Society for Paediatric Dermatology; Society for Investigative Dermatology; Women’s Dermatologic Society; and Chicago Dermatological Society.

An author of more than 400 original publications, Amy Paller is an NIH-funded laboratory-based and clinical investigator. Her clinical interests focus on genodermatoses and paediatric cutaneous immune-mediated disorders. Her laboratory focuses on sphingolipids and lipid raft signaling, diabetic wound healing, and topical gene therapy using nanotechnology. Amy directs the Paediatric Dermatology Clinical Trials Unit at Northwestern University and her postdoctoral research fellowship at the University of North Carolina. Amy served as Chief of Paediatric Dermatology at Northwestern’s Children’s Hospital and currently is Chair of Northwestern’s Department of Dermatology. She has served on the Board of the American Academy of Dermatology and American Dermatological Association, and acts as President for and sits on the Board of Directors for the: Society for Paediatric Dermatology; Society for Investigative Dermatology; Women’s Dermatologic Society; and Chicago Dermatological Society.

Amy co-chairs the Paediatric Dermatology Research Alliance (PeDRA), chairs the Scientific Advisory Board of the National Eczema Association, and is Vice President of the International Society for Atopic Dermatitis.

Latest evidence on *S. aureus* and atopic dermatitis pathogenesis

Secondary staphylococcal infection is a major complication of patients with atopic dermatitis and is well recognized to exacerbate disease severity. The majority of individuals with AD have positive cultures for *S. aureus* from lesion skin, and often from non-lesional skin as well. Nares are another site of colonization. Disruption of the skin barrier from both decreased expression of proteins of differentiation (including beyond filaggrin) and immune dysregulation with insufficient antimicrobial protein responses are factors that are thought to predispose to *S. aureus* overgrowth. *S. aureus* products (particularly superantigens) have been shown to activate mast cells, trigger Th2 and Th22 immune reactivity, as well as to increase IL-31, a cytokine thought to play a major role in causing pruritus. Release from *S. aureus* of lipoteichoic acid has been shown to increase cutaneous cytokines and bacterial proteases, such as neuraminidases and ceramidases, impairing epidermal barrier function. *S. aureus* has long been known to generate anti-staphylococcal IgE responses, although the significance of these responses remains unclear. In addition, *S. aureus* has been shown to alter the expression of the glucocorticoid receptor, making patients less responsive to topical corticosteroid intervention. Although MSSA infections still predominate in children with AD, MRSA colonization and infections are a growing concern and are associated with greater AD severity. Also of concern is that *S. aureus* from lesional AD skin forms a strong biofilm and expresses biofilm-associated genes, which is also associated with antibiotic resistance. Minimizing contamination of topical products and utilization of antiseptic baths, such as with sodium hypochlorite (bleach), are important components of maintenance therapy for AD patients with a tendency towards *S. aureus* infections. Family members often carry the same *S. aureus* organism and decolonization of the entire household, including pets, can be critical for improvement. Recent studies have focused on the skin microbiota and have shown that shifts towards more staphylococcus and less diversity occur with AD flares. The fecal microbiota of infants with AD also shows reduced diversity and can be influenced by non-host factors, such as diet, systemic antibiotic use, hygiene and family size. These observations raise the question of the relative importance of overgrowth of *S. aureus* vs. reduction in other, potentially protective bacteria (microbial dysbiosis). Indeed, products of *S. epidermidis* have recently been shown to combat both *S. aureus* and Group A streptococcus, including through inducing expression of beta-defensins in the skin. Commensal bacteria enhance cutaneous T cell function and, when applied epicutaneously, reduce skin inflammation in AD mice, raising the possibility of providing nonpathogenic bacteria as therapy applied directly to the skin. A further investigation of the reasons for bacterial colonization, the role of biofilm formation in AD, and the impact of altered bacterial diversity in AD lesions will be important for developing new tools for treatment.
References


Notes
Atopic dermatitis (AD) is the most common allergic skin condition, occurring in 10 - 20% of children in Western countries and the first allergic disease to appear, often in early infancy. Pruritus can cause severe disruptions to the patient’s sleep and as such detrimentally affects their quality of life as well as that of their family. 50% of patients with moderate to severe AD will also suffer from asthma and allergic rhinitis. Furthermore, AD patients have a five-fold risk of developing food allergies.

There is growing evidence that the primary problem in AD is a skin barrier dysfunction, which may be due to genetic and/or environmental factors. A leaky skin barrier allows irritants and allergens to activate keratinocytes in the epidermis, leading to local inflammation. If severe or prolonged this can induce more generalised allergic reactions.

This lecture focuses on the non-pharmacologic treatment of AD in light of recent advances and our knowledge of its pathogenesis.

AD and allergy

The link between AD and specific allergens such as foods, dust mite and topical treatments will be discussed. Milk, egg, soya and wheat are the most common foods triggering AD and largely affect infants and young children. Older children and adults are much less likely to suffer from food-induced flares. The indications and pitfalls of standard allergy testing are discussed, particularly in light of the fact that AD is a non-IgE mediated allergic disease and the high total IgE concentration in many children increases the risk of false positive results. Treatment options include avoidance and intermittent trials of food reintroduction, as most children will eventually outgrow the problem. The possibility of desensitisation to some allergens is also discussed in light of progress in our understanding of the immune basis of allergy and tolerance. For instance, early introduction of processed or cooked milk or egg has been shown to speed tolerance induction. The importance of working with a dietitian is emphasised. Aeroallergen such as house dust mite and pollens are more difficult to avoid. House dust mite avoidance measures are of limited effectiveness and the best approach is often regular use of moisturisers and keeping the skin covered.

AD and moisturisers

If allergies are more common in patients with AD because their skin barrier is leaky, allowing irritant and allergens in, could the allergic march be better managed or even prevented by use of moisturisers that improve the barrier? Recent studies suggest that use of moisturisers in infants at high risk of AD might prevent its subsequent development and possibly that of other allergies.
Mind - body interplay

There is no doubt that the pruritus caused by AD is the major cause of distress both to the patient and their family, particularly in those whose sleep is disrupted. In the last part of the lecture some short illustrative cases are used to highlight the important link between the physical disease and psychological factors in terms of triggers, patient compliance and treatment resistance.

References


Psoriasis is an immune-mediated, chronic inflammatory skin disease with a prevalence of approximately 2%. Up to 80% of patients have scalp involvement at the initial presentation or during the course of the disease. Scalp psoriasis, due to the visibility of the affected area results into stigmatization for many patients and reduces self-esteem. This, together with the high rate of associated pruritus, lead to worsened quality of life of psoriasis patients.

Adherence to topical treatments is considered to be low and it worsens in chronic diseases such as psoriasis. Some patients perceive topical treatments as ineffective, time consuming and messy and this impacts on adherence. Moreover, scalp psoriasis is considered a difficult-to-treat area and the commonly available topical treatments do not fit with the peculiarities of this anatomical region. Consequently, there are unmet needs for improved formulations of topical treatments that provide higher acceptance and preference rates from patients in order to enhance adherence.

The non-interventional study on patients’ preference on treatments for scalp psoriasis compared a new non-alcoholic mometasone emulsion with a calcipotriol-betamethasone combination gel. The main results of the study showed higher patients’ preference for the mometasone emulsion, together with comparable efficacy results (in terms of PGA), quality of life improvement and adherence rates to the calcipotriol-betamethasone gel. Physicians perceived the mometasone emulsion to have better general tolerability, compliance and general efficacy. These results suggest that mometasone emulsion can be a good alternative for treating scalp psoriasis, as first-line therapy, with comparable efficacy results and better acceptance by patients to calcipotriol-betamethasone gel.
References

Notes
Pierre-Antoine Defossez has been studying transcriptional regulation for his whole career. His Ph.D., in the lab of Dominique Stéhelin and Yvan de Launoit, focused on transcription factors of the ETS family and their role in cancer. His postdoc, with Lenny Guarente at MIT, dealt with SIR2 and its role in ageing. After he set up his independent lab in Paris, Pierre-Antoine focused on epigenetic regulation in mammals, with an emphasis on DNA methylation, and the proteins that bind methylated DNA.

The advent of high-throughput sequencing has revolutionized biological research. Obtaining whole-genome sequences is no longer limiting, and this has ushered in a new era in human genetics. But the genetic code itself is only part of what makes our cell tick, and of what makes us human. All of our cells have the same code, yet they have vastly different phenotypes. For instance, an iPS has the same genotype as a skin fibroblast, yet they have different potentialities. What makes our cells different from one another, and an iPS different from a skin fibroblast is, in large part, epigenetics.

The definitions of epigenetics have varied over time, and there is still some debate as to what should, and what should not, be included in epigenetics. Amid this debate, two phenomena are clearly accepted as epigenetic: the dynamics of histone proteins, and the covalent modifications of DNA. Histone proteins form the nucleosomes around which DNA is wrapped. They are the object of a complex regulation, as they can be marked by a plethora of post-translational modifications, each of which can have precise biological outputs. In addition, histone proteins exist in different flavours, and the replacement of a histone by one of its variants can also influence the activity of the neighbouring locus. As for DNA, it can also be marked by covalent modifications.

Cytosines have long been known to exist in two forms: unmethylated or methylated. More recently, we have learnt that additional modifications of methylcytosines exist, and that DNA can be actively demethylated. An interesting theme that is common to histone dynamics and DNA modifications is that both processes involve writers and readers of the respective marks. Both categories of molecules are excellent prospects for targeting by small-molecule activators or inhibitors, and these are potential new drugs for human health. I will provide an overview of the state of research in epigenetics, and underline the practical consequences of this discipline for skin biology.
References


Notes
Ángela Hernández-Martín has been working as a Consultant Dermatologist at the Hospital of Niño Jesus of Madrid, Spain, since March 2007. She graduated in Medicine at the Salamanca Medical School in 1991, and in 1996 completed her specialization in dermatology at the University Hospital of Salamanca. Ángela is an active member of the most prestigious national and international scientific societies of dermatology and paediatric dermatology. She has co-authored over 100 national and international scientific publications and holds a Ph.D. on ichthyosis genetics. As a Paediatric Dermatologist, Ángela Hernández-Martín specializes in genodermatosis and neurocutaneous diseases in children, and she is involved in several national and international collaborative studies on infantile hemangiomas, ichthyosis, epidermolysis bullosa and atopic dermatitis.

**What is new in paediatric dermatology?**

It is difficult to summarize the latest clinical, genetic and therapeutic advances; not only is the amount of scientific information overwhelming, but certain findings are the consequence of observations or previous studies where the final analysis has yielded relevant results. This is the case concerning the association between anemic nevus and neurofibromatosis type 1 (NF1), a relationship which has been known since the early twentieth century. However, it was not until 2013 when there was true characterization of this association and its possible predictive value was pointed out.

Vascular anomalies are, by their frequency and prognostic significance, subject to incessant biomolecular study. Sturge-Weber syndrome, a neurocutaneous entity classically considered a process “of unknown origin” has been recently characterized genetically, and we know now that around 90% of patients have a somatic mutation in the gene GNAQ in both brain tissue and the skin. On clinical grounds, distribution of the facial-associated port wine stain might be an important predictor of the Sturge-Weber syndrome risk that we need to take into account. But if there is a vascular anomaly of particular relevance in paediatric dermatology, it is the infantile hemangioma (IH). With the growing popularity of oral propranolol treatment of HI, a group of experts have published a consensus guide that can help guide clinical treatment guidelines.

But while the decision to treat a HI is particularly simple when there is a disfiguring or compromise of vital structures, what do we do in cases of smaller lesions located, for example, in the central region of the face, producing mere aesthetic impact? Probably a good therapeutic alternative would be timolol, a topical β-blocker without apparent systemic absorption that has also proved highly effective.

Finally, we will review new therapeutic options that we can use for hyperhidrosis and rosacea in children, two frequent conditions that can be challenging in this age group.
References


Notes
Rosa Taberner has been working as a Dermatologist in Hospital Son Llàtzer in Palma since 2002, and she is member of the Spanish Academy of Dermatology and Venereology. Rosa received her M.D. Degree in 1995 from the Universitat Autònoma de Barcelona (Spain), and completed the specialization in Dermatology in 2000 at Hospital de la Santa Creu i de Sant Pau (Barcelona, Spain).

Rosa has been in charge of the residency training program in dermatology at Hospital Son Llàtzer since 2009, and has published several publications about e-health, teledermatology and e-learning. She has been in charge of the teledermatology program in Hospital Son Llàtzer since 2005. Rosa is Editor of the most visited dermatology blog in Spanish (Dermapixel) since 2011, and she is highly active in social networks, especially Twitter (@rosataberner).

Web 2.0 describes World Wide Web sites that use technology beyond the static pages of earlier web sites, allowing users to interact with each other in a social media dialogue as creators of user-generated content in a virtual community, in contrast to web sites where the people are limited to a passive role.

In previous years, a great number of web 2.0 applications have been adopted by many online health-related professional and educational services, even in dermatology. This has provided an opportunity for powerful information sharing and ease of collaboration.

But in the current world where information is everywhere, we can have an information overdose, which is called infoxication. For this reason the concept "content curation“ becomes essential. We have to distinguish information (data) from knowledge and wisdom, and we can use new technologies for this purpose.

Personal Learning Environment (PLE) is a system that helps learners take control of and manage their own learning. This includes providing support for learners to:
- Set their own learning goals
- Manage their learning, both content and process
- Communicate with others in the process of learning

We can build our own PLE with several online tools, which help us in our dermatologic life and in the relation with our patients. These tools can be used for branding and relationships with other professionals and patients, collaborative work with cloud storage applications, to keep and share information, organize online meetings, share our presentations, and manage research sources and tools to automate several processes to make the Internet work for us.

More advanced mobile phone technologies are enabling the potential for further healthcare delivery. Smartphone technologies are now in the hands of a large number of physicians and other healthcare workers in low- and middle-income countries. Although far from ubiquitous, the spread of Smartphone technologies opens up doors for mHealth (mobile Health) projects such as technology-based diagnosis support, remote diagnostics and telemedicine, web browsing, GPS navigation, access to web-based patient information, post-visit patient surveillance, and decentralized health management information systems (HMIS).

There are multiple Apps useful for dermatologist: PASI calculators, Med-calculators, guidelines adapted to mobile devices, etc. Mobile can also be used in teledermatology, follow up of pigmented lesions or adapting devices to take dermoscopy pictures.

Finally we have to see how the newest wearable devices, like Google Glass, will adapt to the dermatologic practice (or not).

Dermatology 2.0 is not only a technology question, but rather an attitude.
Reference

Notes
Marcela Del Rio Nechaevsky is: Vice Dean of the School of Biomedical Engineering and Professor of Bioengineering at University Carlos III Madrid; Head of the Regenerative Medicine Unit at CIEMAT; Principal Investigator of the Centre for Biomedical Research on Rare Diseases (CIBERER); and Director of the Regenerative Medicine and Tissue Bioengineering Project at Fundación Jiménez Díaz (IIS-FJD).

Marcela received her Pharmacy Degree from the University of Buenos Aires and carried out her postgraduate training at the MD Anderson Science Park, Research Division (USA). Thereafter, she became a fellow of the Spanish Instituto de Salud Carlos III (ISCIII) and moved to Madrid to the Complutense University, where after an experimental dissertation in molecular pharmacology, she was awarded her Ph.D. by the School of Medicine. She continued her postdoctoral work in the cutaneous gene therapy field at the Biomedicine Division of CIEMAT, where she soon became Research Associate and Team Leader.

Marcela’s team is focused on understanding the underlying mechanisms of tissue repair in order to improve the healing process under impaired conditions. Her current research interests also in discovering what causes inherited skin diseases and how these abnormalities disrupt skin structure and function. Del Rio’s team is part of the CIBERER, a network structure set up at the initiative of the ISCIII, with the aim of finding diagnoses and innovative therapies for patients affected with rare diseases (www.ciberer.es). Her experimental humanized models were shown to be suitable to gain information on normal functions of the mutated proteins and to uncover novel molecular phenomena.

Marcela Del Rio is author of more than 100 papers in international journals and has 4 issued patents. She is a member of the Spanish Society of Cell and Gene Therapy, the European Society for Dermatological Research (ESDR) and serves on the Editorial Board for the journal ‘Experimental Dermatology’. Marcela has been distinguished by the DEBRA-Spain Award.

The clinical application of stem cells in dermatology, now and in the future

Regenerative medicine involving cell therapy is a field that seeks to combine the knowledge and expertise of diverse disciplines towards the aim of restoring impaired organ functions in the body. Its goal is not just to replace what is malfunctioning, but to provide the elements required for in vivo repair, to devise replacements that seamlessly interact with the living body, and to stimulate the body’s intrinsic capacities for regeneration. A great deal of expectation has been placed on the capabilities of stem cells to achieve these aims and certainly, revolutionary advances in the field are foreseen.

Skin is the outermost tissue of the body and the largest organ in terms of both weight and surface area. The main function of skin is to act as a barrier to the surrounding environmental dangers. It protects the body from friction and impact wounds with its flexibility and toughness. It also prevents water loss and regulates body temperature by blood flow and evaporation of sweat. The skin is formed by anatomically, functionally and developmentally distinct tissues: the epidermis and the dermis. The epidermis is the outermost component of the skin formed mostly by keratinocytes. The dermis is the living layer that acts as a substrate and a support network for the epidermis. The essential dermal cell type is the fibroblast, which is responsible for the production and maintenance of the structural elements of skin. Finally, a complex basement membrane (BM) composed by specialized proteins serves as an epidermal and dermal anchoring structure. Regeneration of the epidermis throughout life is achieved by a specialized, discrete population of basal keratinocytes, known as epidermal stem cells.

Bioengineered skin substitutes have emerged over the past 20 years as the most carefully studied and proven of the advanced wound management technologies. While the initial impetus for their development was to replace autograft and allograft in acute skin losses applications, they have found wider application in the treatment of chronic and even genetic cutaneous disorders. Although an ideal skin substitute has not yet been achieved, robust products have been developed by our team that provide many of the desired clinical characteristics. Such products were devised by carefully looking at the wound healing process. Thus, fibrin was chosen as a matrix suitable to host dermal cells/mesenchymal stem cells in bioengineered dermal or dermo-epidermal equivalents. Fibrin is the primary and temporary wound healing matrix allowing blood clotting and migration of both epithelial and mesenchymal cellular elements that, in turn, will repair the damaged tissue. Autologous epidermal stem cells, as part of a fibrin-based skin equivalent, have been used successfully for permanent skin regeneration in different situations: extensive burns; necrotizing fasciitis; and graft-versus-host disease. Promising results are being obtained also in the management of genodermatosis (due to mutations in the genes coding for the BM) through gene-transferred epidermal stem cell transplantation.
References


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Dagmar Simon works as an Associate Professor at the Department of Dermatology at the University of Bern in Switzerland. She is a board certified dermatologist and allergist/clinical immunologist. After finishing medical school, she attended a residency program in dermatology at the University of Jena, Germany. She was trained in dermatopathology at the Women’s College Hospital Toronto, Canada, and specialized in the field of allergy in Davos. At the Department of Dermatology in Bern, she is in charge of the eczema and atopic dermatitis clinic and the skin testing unit.

Her main research interest is the investigation of the pathomechanisms of eosinophilic diseases of the skin such as atopic dermatitis, contact dermatitis, and the esophagus, in order to identify new therapeutic targets. She has initiated and participated in several clinical trials investigating the efficacy, safety and mode of action of new pharmacological compounds. She has published her results in highly ranked journals. Furthermore, she serves in the editorial board of Allergy and as a reviewer for a number of journals in the fields of dermatology and allergy.

Dagmar Simon is member of the leading European and Swiss Societies of Dermatology and Allergy. She chaired the Working group Dermatoallergology at the Swiss Society of Dermatology and Venerology (2007-2010) and currently serves as Swiss coordinator of the COST action StanDerm.

Topical corticosteroids (TCS) have been used to treat inflammatory skin diseases since 1952. Despite the introduction of other anti-inflammatory substances, e.g. topical calcineurin inhibitors for atopic dermatitis, TCS are indispensable for dermatological therapy and the most prescribed topical medication. Synthetic modifications of the cortisol molecule such as halogenation, mainly fluorination and esterification, resulted in an increased potency and lipophilia, respectively. Thus newer compounds such as mometasone furoate, methylprednisolone aceponate and fluticasone propionate exert potent local activity but, due to their instability, systemic effects are neglectable. In this lecture, we will discuss what has been the development in the field of TCS apart from new chemical molecules.

Progress has been made in developing new galenic formulations. Choosing the optimal vehicle is relevant for an effective topical therapy, since it may affect the potency of TCS, have direct effects on dermatoses, and influence the acceptance and thus the adherence to treatment by the patients. Ointments provide lubrication and occlusion and thus may increase the absorption of corticosteroids. Creams in particular those with high water content are suited for acute, widespread and exudative inflammatory lesions. They are easy to spread and may have additional antipruritic effects. For treatment of hairy or intertriginous areas, and oozing lesions, non-alcoholic emulsions have been developed in order to avoid unpleasant irritant effects caused by alcohol-containing formulations.

In recent years, new trends in the use of TCS have been observed turning from the classic cyclic regimen to cope with severe acute exacerbations towards a maintenance and proactive therapy with modern TCS. Several regimens of TCS application have been proven to be effective and increase safety. To achieve an improvement of disease signs and symptoms, intense short-term therapy with TCS is recommended. Tapering TCS can be done by using less potent substances or keeping a potent TCS while reducing the frequency. For maintenance therapy, the application of TCS every second to third day (intermittent therapy) or on three consecutive days (interval therapy) has been used. Furthermore, the application of TCS can be alternated with non-steroidal substances, e.g. topical calcineurin inhibitors for atopic dermatitis or calcipotriol for psoriasis.

Taken together, TCS are still the most significant compounds for the treatment of inflammatory skin diseases. The development of modern TCS and new formulations as well as the trend towards a maintenance and proactive therapy have significantly increased the benefit-risk ratio and thus the importance of TCS in dermatology.
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The introduction of dermoscopy in dermatology revealed structures and features invisible to the naked eye, providing additional morphologic information during clinical examination of a skin lesion. The technique has been applied to the evaluation of melanocytic tumors, with research efforts focusing mainly on the identification of dermoscopic characteristics of melanoma. With time, the value of dermoscopy in improving melanoma detection was established, and the technique gained global acceptance for the assessment of pigmented skin tumors.

More recently, several investigators reported on dermoscopic patterns of non-pigmented tumors, as well as non-neoplastic dermatoses. The latter were based on the observation that, apart from pigmentation structures formed by melanin deposition, dermoscopy may also reveal vascular alterations, color variegations, follicle disturbances, and other features invisible to the unaided eye. The dermatoscope is now equivalent to the dermatologist’s stethoscope, providing a clinician experienced in the technique with additional information on the morphology of skin lesions or eruptions.

In 2006, a review article summarized existing evidence on dermoscopy in general dermatology, suggesting a 5-step diagnostic algorithm when evaluating non-pigmented skin lesions. Since then, numerous articles describing dermoscopic characteristics of inflammatory and infectious diseases have been published, enriching the available knowledge on the topic. Most of the published data on dermoscopy of non-neoplastic dermatoses comes from reports of one or few cases and, accordingly, additional research is required to clarify the role of dermoscopy in clinical diagnosis. However, in several fields, such as psoriasis and its differential diagnosis, or diagnosis of scabies, dermoscopic criteria have been tested in appropriately designed diagnostic accuracy studies, providing evidence that the technique significantly improves the clinical diagnostic performance.

Clinical examination is the mainstay of diagnosis in inflammatory and infectious diseases, because it represents a synthesis of several components. The patients’ personal and family history, history of the current eruption, macroscopic characteristics, and distribution of the lesion(s) are some of the parameters to be considered and combined during the diagnostic approach of a given patient. Dermoscopy provides additional morphologic information at a sub-macroscopic level, completing the puzzle of clinical examination. Dermoscopic findings should therefore be interpreted within the overall clinical context of the patient.

How can dermoscopy help in the differential diagnosis of inflammatory lesions?

Giuseppe Argenziano is Professor of Dermatology at the ASMN Hospital, Reggio Emilia, Italy, and Coordinator of the Skin Cancer Unit at the Research Hospital “Arcispedale Santa Maria Nuova IRCCS” in Reggio Emilia, Italy. His main research field is dermato-oncology and, particularly, melanoma diagnosis and the development of more accurate methods for the early recognition of skin cancer. He is author of numerous scientific articles and books concerning dermoscopy, a new technique improving the clinicians detection of benign and malignant skin tumors. As Coordinator of a Skin Cancer Unit, he has established a successful tertiary, multidisciplinary, referral center particularly devoted to the diagnosis and management of patients with skin tumors.

Giuseppe Argenziano is: Co-founder and President of the International Dermoscopy Society; Project Leader for the development of a high diagnostic technology oncologic center at the Arcispedale Santa Maria Nuova IRCCS in Reggio Emilia; faculty member of the MSC in Dermoscopy and Preventive Dermato-oncology, and the Short Course in Dermoscopy (two e-learning courses by the Medical University of Graz and by the Cardiff University respectively); and member of the Editorial Board of the Journal of the American Academy of Dermatology.

Over the past 20 years Giuseppe has supervised over 60 foreign students and 20 residents in dermatology, established scientific collaborations with more than 200 colleagues from more than 30 nations, and organized more than 50 national and international scientific activities, courses and conferences (such as the Consensus Net Meeting on Dermoscopy and the First World Congress of the International Dermoscopy Society). Giuseppe Argenziano has authored more than 400 full scientific articles and he has produced landmark primary publications and books in the field of dermoscopy. Over the past 20 years he has been invited as speaker and/or chairman to more than 450 national and international conferences in the field of dermatology. His combined publications have received a sum total of 5751 citations with an h-index value of 38 (Scopus 07/2014).
Vascular structures represent the most important group of criteria during dermoscopic evaluation of inflammatory skin diseases. Therefore, selection of equipment that preserves vessels’ morphology and enhances their optimal visualization is considered essential. Standard hand-held dermatoscopes require direct contact of the optical lens with the skin surface, which may result in alteration or even disappearance of the morphology of the underlying vascular structures. Although using ultrasound gel and applying minimal pressure used to be considered the optimal practice, this problem was radically resolved by the introduction of the second-generation hand-held dermatoscopes, which use polarized light and do not require contact with the skin. To acquire a dermoscopic image, a camera attached to a new-generation dermatoscope is preferable, compared with photographic equipment requiring direct contact of the dermoscopic lens and the skin surface.

References


