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2021st Annual UBC Skin Research Day

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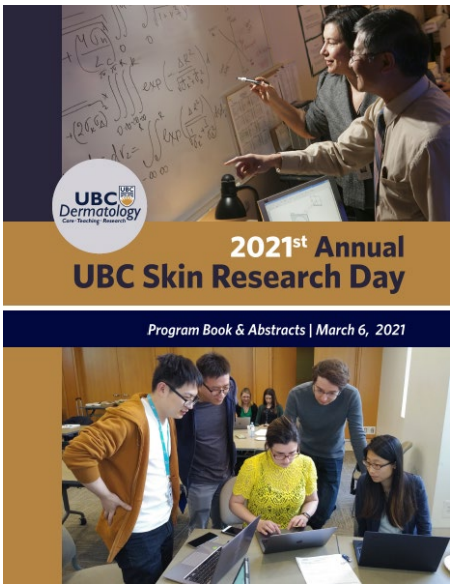

About the Cover

The program features concise presentations and lively direct and digital interactions by medical and graduate students, residents, fellows, and faculty. *Cover credit: Dr. Jan Dutz, Karen Ng, Cindy Svatek*

UBC Department of Dermatology and Skin Science

Our Mission

To create and advance meaningful knowledge of the skin and its disorders through exemplary patient care and excellence in education and research at the provincial, national, and international levels.

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Acknowledgements

We gratefully acknowledge the support of the following sponsors who have provided educational grants to support the 2021 UBC Skin Research Day.

Opening Remarks (9:00 – 9:05 AM)

Dr. Jan Dutz

Oral Presentation I (9:05 – 10:25 AM)

Moderators: Dr. Touraj Khosravi & Dr. Rory Sutherland

9:05 AM **AN ADDED BENEFIT OF MASKS DURING THE PANDEMIC: UV PROTECTION**
Valerie C. Doyon[1], Touraj Khosravi-Hafshejani[2], Vincent Richer[2,3]

9:13 AM **AUTOMATED DELINEATION OF THE DERMAL-EPIDERMAL JUNCTION ZONE IN VOLUMETRIC MULTIPHOTON MICROSCOPY IMAGING OF HUMAN SKIN IN VIVO**
Giselle (Yunxian) Tian[1,2,3], Zhenguo Wu[1,2,3], Harvey Lui[1,2,3], Jianhua Zhao[1,2,3], Sunil Kalia[1,2,4,5], Haishan Zeng[1,2,3]

9:21 AM **ASSESSING POST-MARKETING SURVEILLANCE DATA TO IDENTIFY SEVERE CUTANEOUS ADVERSE EVENTS OF IMMUNE CHECKPOINT INHIBITOR TREATMENTS**
Omar Hasan Ali[1,2,3,*], David Bomze[3,4,*], Tomer Meirson[5], Lukas Flatz[2,3,6,7].

9:29 AM **LIGHT AND LASER-BASED TREATMENTS FOR GRANULOMA ANNULARE: A SYSTEMATIC REVIEW**
Ilya M. Mukovozov[1], Nadia Kashetsky[2] and Vincent Richer[1,3]

9:37 AM **SPARING OF ATOPIC DERMATITIS IN THE DIAPER REGION: A SCOPING REVIEW**
Aria Jazdarehee[1], Jason Lee[1], Ilya Mukovozov[2], and Richard Lewis[2,3]

9:45 AM **DIRECT AI-BASED PREDICTION OF CLINICAL MANAGEMENT BYPASSING DIAGNOSIS: APPLICATION TO SKIN LESIONS**
Kumar Abhishek, Jeremy Kawahara, Ghassan Hamarneh

9:53 AM **CHOOSING WISELY CANADA RECOMMENDATIONS: RESOURCE STEWARDSHIP IN DERMATOLOGY**
Linda Zhou[1], Sabrina Nurmohamed[1], Sheila Au[1], Jennifer Beecker[2], Peter Green[3], Lynne Robertson[4], Regine Mydlarksi[4]

10:01 AM **INCORPORATING CLINICAL KNOWLEDGE INTO A DEEP NETWORK FOR 7 POINT-CHECKLIST EVALUATION**
Yuheng Wang[1,2,3,4], Daniel C. Louie[1,2,3.4], Jiayue Cai[5], Z. Jane Wang[5,6] Harvey Lui[2,3,4], Tim K. Lee[1,2,3,4]

10:09 AM **TOPICAL CHOLESTEROL AND LOVASTATIN FOR THE TREATMENT OF DISSEMINATED SUPERFICIAL ACTINIC POROKERATOSIS: A CASE SERIES**
Angela Burleigh, Se Mang Wong and Brian Gregory

10:17 AM **COMPUTERIZED LOCALIZATION AND TRACKING OF PIGMENTED SKIN LESIONS ON 3D WHOLE BODY TEXTURIZED SKIN MESHES**
Mengliu Zhao*, Jeremy Kawahara* (* joint-first authors), Sajjad Shamanian, Kumar Abhishek, Ghassan Hamarneh

Break and Poster Viewing (10:25 – 10:40 AM)

Speed Poster Presentation (10:40 – 11:10 AM)

Moderators: Dr. Évelyne Bonnardeaux & Mr. Thomas Zhang

1 **RATIONALIZING PHOTOTHERAPY SERVICES DURING THE COVID-19 PANDEMIC: STRATEGIES AND IMPACTS ON PATIENT ACCESS AND OUTCOMES**
Tashmeeta Ahad[1, 2], Sunil Kalia[1, 2, 3, 4], Harvey Lui[1, 2]

2 **BIASING OF ACTIVATED PROTEIN C FUNCTION TO ACCELERATE CUTANEOUS WOUND HEALING**
Frank M.H. Lee[1,2,3,4], Scott Meixner[2,3,4], Edward L.G. Pryzdial[2,3,4]

3 **RISK FACTORS FOR SKIN CANCER IN BC**
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4 **TOPICAL APPLICATION OF A NOVEL POWDERED SCAFFOLD FOR RAPID TREATMENT OF SKIN INJURIES**
Myriam Verly[1,3], Emily Mason[3,4], Reza Jalili[2,3], Breshell Russ[3], Ruhangiz Kilani and Aziz Ghahary[2,3]

5 **ALLERGIC CONTACT DERMATITIS CAUSED BY TOPICAL MEDICAMENTS**
Jamie Phillips[1], Gillian de Gannes[1,2], Charles Choi[3], Saba Vafaei-Nodeh[3]

6 **VIEWING THE MICROSCOPIC SKIN WOUND HEALING RESPONSES TO PRECISE SELECTIVE PHOTOTHERMOLYSIS USING NON-INVASIVE MULTIMODALITY MICROSCOPY AND IMAGING GUIDED MICRO-RAMAN SPECTROSCOPY**
Shujian Li[1,2,3], Yuxian Tian[1,2,3], Zhenguo Wu[1,2,3], Jianhua Zhao[1,2,3], Harvey Lui[1,2,3], Sunil Kalia[1,2,4,5], Haishan Zeng[1,2,3]

7 **HERPETIFORM STREPTOCOCCAL SKIN INFECTION IN CHILDREN: A REPORT OF 2 CASES**
Aryan Riahi[1], Wingfield Rehmus[2]

8 **INTERFOLLICULAR DISTANCE: A NOVEL METRIC FOR ASSESSMENT OF HAIR FOLLICLE DISTRIBUTION ON THE SCALP**
Ali Majd, MD[1], Tim K. Lee, PhD[1,2]

9 **PROPYLENE GLYCOL: A COMMON INGREDIENT IN TOPICAL CORTICOSTEROIDS AND ITS ROLE IN ALLERGIC CONTACT DERMATITIS**
Matthew Roberts[1], Gillian de Gannes[1,2]

10 **TERT PROMOTER MUTATIONS IN AMBIGUOUS MELANOCYTIC LESIONS**
Lisa Borretta, Basile Tessier-Cloutier, Basil A. Horst

11 **UNIVERSITY OF BRITISH COLUMBIA RURAL AND REMOTE DERMATOLOGY – DESCRIBING CONSULT CHARACTERISTICS AND PATIENT DEMOGRAPHICS FROM MAY TO DECEMBER 2020**
Catherine Lim[1], Nathan Teegee[2], Meghan Donaldson[3], Neale Smith[3], Craig Mitton[3], Neil Kitson[2]

12 **AN OPTICAL INSTRUMENT FOR IMAGING-GUIDED BIOCHEMICAL ANALYSIS OF MICROSCOPIC SKIN TISSUE STRUCTURES *IN VIVO***
Zhenguo Wu[1,2], Liwei Jiang[1,2], Jianhua Zhao[1,2], Harvey Lui[2], Haishan Zeng[1,2]

13 **CRISABOROLE 2% OINTMENT VS CLOBETASOL 0.05% OINTMENT FOR TREATMENT OF PEDIATRIC CHRONIC HAND DERMATITIS**
Julia Mayba[1], James Bergman[1], Yuebo Yang[2]

14 **COMPARING THE BRITISH COLUMBIA CANCER REGISTRY TO HEALTH ADMINISTRATIVE CLAIMS-BASED ALGORITHMS FOR ASCERTAINING KERATINOCYTE CARCINOMA**
Thomas JX Zhang[1,2,3], Tim K. Lee[1,2,3], Harvey Lui[1,2,3], Jan Dutz[1,4], Sunil Kalia[1,2,3,4]

15 **IS VITAMIN D ASSOCIATED WITH CONGENITAL ICHTHYOSIS? A LITERATURE REVIEW FOR GUIDANCE IN MANAGEMENT**
Ian T.Y. Wong[1], Joseph M. Lam[1,2]

16 **MANAGEMENT OF PEDIATRIC STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS**
Danny Mansour, MD,[1] Ashley M. Yu, MD,[2] Brandon Worley, MD,[3,4] Amin Bahubeshi, MD,[3] Kenneth Tang,[4] Neil H. Shear, MD,[5] Elena Pope, MD, MSc,[6] Michele Ramien, MD[7]

Break (11:10 – 11:25 AM)

Oral Presentation II (11:25 – 12:53 AM)

Moderators: Dr. Harry Liu & Ms. Jenny Lee

11:25 AM **REVIEW OF EYE INJURIES ASSOCIATED WITH COSMETIC LASER DEVICES**
Lisa Flegel MD[1], Femida Kherani MD FRCPC[2-4], Vincent Richer MD FRCPC FAAD[1,5]

11:33 AM **LIGHT POLARIZATION INTERACTION WITH SKIN CONDITIONS ASSESSSED BY POLARIZATION SENSITIVE OPTICAL COHERENCE TOMOGRAPHY**
Xin Zhou[1], Daniel C. Louie[2,3,4], Sina Maloufia[1], Lioudmila Tchvialeva[3,4], Shuo Tang[1], and Tim K. Lee[2,3,4]

11:41 AM **ALLEVIATING POST-OPERATIVE PATIENT ANXIETY IN THE COVID-19 PANDEMIC: A MOHS SURGERY APP**
Farah Kassam[1], Irèn Kossintseva[2]

11:49 AM **M-CSF-STIMULATED CD11 b^{+} MYELOID CELLS INDUCE ALOPECIA AREATA IN C3H/ HeJ MICE *VIA* ACTIVATING B LYMPHOCYTES**
Yunyuan Li, Ruhangiz T. Kilani, Rana Alamdaran, Arveen Shokravi, Aziz Ghahary

11:57 AM **BEYOND SKIN DEEP: CASE-BASED ONLINE LEARNING MODULES TO IMPROVE THE UNDERSTANDING OF MULTIDISCIPLINARY CARE IN DERMATOLOGY AMONG STUDENTS**
Harry (Chaocheng) Liu[1], Vivienne Beard[2], Megan Chan[2], Marlene Dytoc[3]

12:05 PM **PATIENT SATISFACTION SURVEY AT A VANCOUVER PATCH TESTING CLINIC: A TOOL FOR QUALITY IMPROVEMENT**
Mimi Tran MD[1], Gillian de Gannes MD, CCFP, FRCPC, DABD[1,2]

12:13 PM **SECONDARY INTENTION HEALING OVER EXPOSED BONE FOLLOWING MOHS MICROGRAPHIC SURGERY**
Noelle Wong[1], David Zloty[1]

12:21 PM **THE IMPACT OF COVID-19 ON NORTH AMERICAN DERMATOLOGY PRACTICES**
Misha Zarbafian[1], Danny Guo[2], Jeffrey Dover[3], Shannon Humphrey[1,4]

12:29 PM **UBC RURAL AND REMOTE DERMATOLOGY: A PROGRESS REPORT**

Nathan Teegee[1], Catherine Lim[4], Gabrielle Serafini[2], Rich Lester[2,3], Meghan Donaldson[5], Neale Smith[5], Craig Mitton[5], Neil Kitson[1]

12:37 PM **POLARIZATION MEMORY RATE: A NEW OPTICAL BIOMARKER FOR SKIN CANCER DETECTION**

Daniel C. Louie[1,2,3], Lioudmilla Tchvialeva[2,3], Sunil Kalia[2,3], Harvey Lui[2,3,4], Tim K. Lee[1,2,3,4]

12:45 PM **THE IMPACT OF COVID-19 ON THE DIAGNOSIS OF MELANOMA IN BRITISH COLUMBIA**

Marie O'Connor[1], Richard I. Crawford[1,2]

Closing Remarks (12:53 – 1:00 PM)

Dr. Jan Dutz

ORAL PRESENTATION ABSTRACTS

9:05 AM

AN ADDED BENEFIT OF MASKS DURING THE PANDEMIC: UV PROTECTION

Valerie C. Doyon[1], Touraj Khosravi-Hafshejani[2], Vincent Richer[2,3]

[1]MD Undergraduate Program, University of British Columbia, Vancouver, Canada
[2]Department of Dermatology and Skin Science, University of British Columbia, Vancouver, Canada
[3]Pacific Derm, Vancouver, Canada

Background: The rapid widespread use of masks during the COVID-19 pandemic presents a new potential avenue for protecting the lower half of the face from the harms of sun exposure. Universal masking policies could have a substantial impact on patients with photosensitivity disorders and in the prevention of skin cancer.

Objective: This project was undertaken to provide information on the ultraviolet (UV) shielding properties of masks. This synthesis of current research will help physicians counsel patients on optimal mask choices, from both dermatological and public health viewpoints.

Methods: A narrative literature review was conducted using articles from textile and dermatology journals published between 1994-2020. The variables impacting the UV protection of masks were reviewed, including fabric type, construction, porosity, and color. Other factors related to wear and use such as moisture, stretch, laundering, and sanitization are discussed in the context of the pandemic.

Findings: Black, tightly woven, triple-layered polyester cloth masks were determined to be optimal for protection against both UV radiation and SARS-CoV-2 in the community. Cotton masks should be washed before first use in fluorescent brightening agents. The UV protection of surgical masks and N95s is largely unknown.

Conclusion: The face masks for the public that are safest against pathogens such as SARS-CoV-2 are generally also the most protective against UV damage. Patients should be encouraged to invest in a high-quality mask to simultaneously help reduce the spread of SARS-CoV-2 and block sun exposure. Studies are needed on the UV protection of masks, especially N95s and surgical masks.

Category: Pilot/Exploratory experiments

9:13 AM

AUTOMATED DELINEATION OF THE DERMAL-EPIDERMAL JUNCTION ZONE IN VOLUMETRIC MULTIPHOTON MICROSCOPY IMAGING OF HUMAN SKIN *IN VIVO*

Giselle (Yunxian) Tian[1,2,3], Zhenguo Wu[1,2,3], Harvey Lui[1,2,3], Jianhua Zhao[1,2,3], Sunil Kalia[1,2,4,5], Haishan Zeng[1,2,3]

[1]Department of Dermatology and Skin Science, University of British Columbia, Vancouver, Canada.
[2]Photomedicine Institute, Vancouver Coastal Health Research Institute, Vancouver, Canada.
[3]Imaging Unit – Integrative Oncology Department, BC Cancer Research Centre, Vancouver, Canada.
[4]Department of Cancer Control Research, BC Cancer, Vancouver, Canada
[5]BC Children's Hospital Research Institute, Vancouver, Canada

Background and Objectives: Diagnostically important histologic features are often situated within the vicinity of the dermal-epidermal junction (DEJ) zone. Under conventional light microscopy, this region is visualized and assessed two-dimensionally from sections of biopsied skin. Here we propose a novel method to automatically delineate and quantify DEJ zone morphometrics in human skin on a three dimensional (3D) basis *in vivo*.

Method: 3D volumetric imaging under dual wavelength multiphoton excitation was carried out on the upper inner arms of 16 healthy volunteers. An automatic segmentation algorithm was developed to delineate the DEJ, thereby separating the epidermis and the superficial dermis. Quantitative characterization of the DEJ in terms of 3D interdigitation (I), arithmetic mean roughness (Sa), and root mean square roughness (Sq) were calculated. These DEJ features as a function of age were analyzed.

Results: The age range of the participants was between 24 to 65. The average and standard deviation value of the interdigitation index (I), arithmetic mean roughness (Sa) and root mean square roughness (Sq) were 1.22 ± 0.07, 12.34 ± 4.89, 16.77 ± 5.47 respectively. Linear regression shows that all three parameters are negatively correlated to age ($p<0.05$, Spearman). These parameters suggest that the overall DEJ surface becomes flatter with chronological aging.

Conclusion: *In vivo* DEJ surfaces show age-dependent morphological differences. Three dimensional volumetric multiphoton microscopy imaging of the skin can be analyzed by automated segmentation algorithms to yield quantitative and objective assessments of DEJ morphology.

Category: Pilot/Exploratory experiments

9:21 AM

ASSESSING POST-MARKETING SURVEILLANCE DATA TO IDENTIFY SEVERE CUTANEOUS ADVERSE EVENTS OF IMMUNE CHECKPOINT INHIBITOR TREATMENTS

Omar Hasan Ali[1,2,3,*], David Bomze[3,4,*], Tomer Meirson[5], Lukas Flatz[2,3,6,7].

[1]Department of Medical Genetics, Life Sciences Institute, University of British Columbia, Vancouver, Canada. [2]Department of Dermatology, University Hospital Zurich, University of Zurich, Zurich, Switzerland. [3]Institute of Immunobiology, Kantonsspital St. Gallen, St. Gallen, Switzerland. [4]Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv-Yafo, Israel. [5]Drug Discovery Laboratory, The Azrieli Faculty of Medicine, Bar-Ilan University, Safed, Israel. [6]Center for Dermatooncology, Department of Dermatology, University Hospital Tübingen, Tübingen, Germany. [7]Department of Dermatology, Kantonsspital St. Gallen, St. Gallen, Switzerland. *These authors contributed equally

The use of immune checkpoint inhibitors (ICIs) for treating cancer frequently entails skin adverse events (sAEs). While phase 3 studies reveal the most common sAEs, the frequency and range of rare sAEs and particularly of severe cutaneous adverse reactions (SCARs) remain unknown. The aim of this study is to identify the frequency of all sAEs and SCARs using post-marketing surveillance data. We performed a retrospective analysis of 19,376,458 adverse events reported to the FDA Adverse Event Reporting System. Reports included in the analyses ranged from mid-2014, to end-2019. Descriptive statistics and reporting odds ratios were used to assess the relative frequencies of sAEs and SCARs. The ICI cohort comprised of 42,059 patients reporting 95,386 AEs, of which 18.3% were sAEs. Across therapy regimen, the combination therapy had the highest proportion of sAEs, followed by anti-CTLA-4, and anti-PD-(L)1 monotherapy. While the frequency of SCARs in the ICI cohort was low, the most common were Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis, of which the latter showed a high mortality rate. Our data further reveals that the development of particular sAEs and SCARs is significantly associated with the used ICI drug and treated cancer type. In conclusion, the study demonstrates a broad heterogeneity of sAEs during ICI therapy and highlights that SCARs may be more frequent among them than assumed. It strongly suggests that medical centers offering ICIs for cancer treatment should ensure access to rapid dermatologic evaluation, for improvement of patient care.

Category: Pilot/Exploratory experiments

9:29 AM

LIGHT AND LASER-BASED TREATMENTS FOR GRANULOMA ANNULARE: A SYSTEMATIC REVIEW

Ilya M. Mukovozov[1], Nadia Kashetsky[2] and Vincent Richer[1,3]

[1] Department of Dermatology and Skin Science, University of British Columbia, Vancouver, BC, Canada
[2] Faculty of Medicine, Memorial University, St. John's, NL, Canada.
[3] Pacific Derm, Vancouver, BC, Canada

Background: Granuloma annulare (GA) is challenging to treat, especially when generalized. A systematic review to support the use of light and laser-based treatments for GA is lacking.

Methods: We performed a systematic review by searching Cochrane, MEDLINE and Embase. Title, abstract, full text screening and data abstraction were done in duplicate. Quality appraisal was performed using the Joanna Briggs Institute critical appraisal tool for case series.

Results: Thirty-one case series met the inclusion criteria, representing a total of 336 patients. Overall, the treatments with the most reported cases were psoralen plus ultraviolet A (PUVA), ultraviolet A1 phototherapy (UVA1) and ultraviolet (UVB) and/or narrowband UVB (nbUVB) which showed a complete response in 59% (n=77/131), 31% (n=27/86) and 39% (n=17/44) of treated patients respectively. The pooled complete response rates for other treatments were 68% (n=21/31) for laser/energy-based devices and 52% (n=13/25) for photodynamic therapy (PDT).

Conclusion: The body of evidence for light and laser-based treatment of GA is sparse. Our results suggest that PUVA has a high clearance rate for GA and the most reported cases, but in clinical practice its use may be limited by concerns of carcinogenesis. Laser devices and PDT have high clearance rates for patients with GA, but access to technology and impractical treatment delivery for generalized GA can be challenging. Although UVA1 and UVB/nbUVB appeared slightly less effective than other therapies, UVB/nbUVB can be considered an appropriate first-line treatment for patients with generalized GA in light of wider availability and a favorable long-term safety profile.

Category: Early experiments with well-defined objectives/hypotheses

9:37 AM

SPARING OF ATOPIC DERMATITIS IN THE DIAPER REGION: A SCOPING REVIEW

Aria Jazdarehee[1], Jason Lee[1], Ilya Mukovozov[2], and Richard Lewis[2,3]

[1] Faculty of Medicine, University of British Columbia, Vancouver, BC, Canada
[2] Department of Dermatology and Skin Science, University of British Columbia, Vancouver, BC, Canada
[3] Kamloops Dermatology, Kamloops, BC, Canada

Background: Atopic dermatitis (AD) is a chronic, inflammatory skin condition commonly affecting infants with notable sparing of the diaper region. Though sources anecdotally attribute this sparing to the physical barrier formed by the diaper and the subsequent retention of moisture, urine, sweat and feces, no studies have formally investigated the factors contributing to this sparing phenomenon.

Methods: We performed a scoping literature review to investigate the factors involved in sparing of AD in the diaper region, namely humidity, scratching, urine, sweat, feces, and microbiome composition.

Results: A total of 130 papers met the inclusion criteria, and extracted data was analyzed in an iterative manner. Increased local humidity facilitates protective changes at the cellular level and offsets transepidermal water loss. Exposure to urea from both sweat and urine may contribute to improved moisturization of the skin through its natural humectant properties and ability to modulate gene expression. Introduction of flora in feces contributes to the generation of protective immune responses and outcompete growth of pathogens such as *Staphylococcus aureus*. Finally, diapers physically prevent scratching, which directly interrupts the itch-scratch cycle classically implicated in AD.

Conclusion: Our study reviews factors that may contribute to the sparing of AD in the diaper region in infants. A limitation to our findings is that the studies reviewed here explore the impacts of these factors on AD broadly, and not explicitly in the diaper region. Additional studies investigating this may further our understanding of AD pathology and contribute to the development of effective therapeutics.

Category: Pilot/Exploratory experiments

9:45 AM

DIRECT AI-BASED PREDICTION OF CLINICAL MANAGEMENT BYPASSING DIAGNOSIS: APPLICATION TO SKIN LESIONS

Kumar Abhishek, Jeremy Kawahara, Ghassan Hamarneh

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Existing machine learning approaches that suggest management decisions for skin lesions rely on predicting the underlying skin condition to infer a decision without considering the variability of decisions that may exist within a single condition. We present the first deep learning-based work to predict clinical management decisions directly from images without explicitly predicting the diagnosis. We use clinical and dermoscopic images of skin lesions and patient metadata from the Interactive Atlas of Dermoscopy dataset (1,011 cases; 20 disease labels; 3 management decisions) and demonstrate that predicting management labels directly is more accurate than predicting the diagnosis and then inferring the management decision (13.73±3.93% and 6.59±2.86% improvement in overall accuracy and area under receiver operating characteristic curve [AUROC] respectively). Based on the retrospective analysis, directly predicting management decisions also considerably reduces the over-excision rate as compared to management decisions inferred from diagnosis predictions (24.56% fewer cases wrongly predicted to be excised). Furthermore, we show that training a model to also simultaneously predict the seven-point criteria and the skin lesion diagnosis yields an even higher accuracy (4.68±1.89% and 2.24±2.04% improvement in overall accuracy and AUROC respectively) of management predictions. Finally, we demonstrate our model's generalizability by evaluating on the public MClass-D dataset (100 cases) and show that our model agrees with the clinical management recommendations of 157 dermatologists as much as they agree amongst each other. We believe that such a system has the potential to suggest management decisions to clinicians (as a second opinion) or directly to patients in under-served communities.

Category: Early experiments with well defined objectives/hypotheses

9:53 AM

CHOOSING WISELY CANADA RECOMMENDATIONS: RESOURCE STEWARDSHIP IN DERMATOLOGY

Linda Zhou[1], Sabrina Nurmohamed[1], Sheila Au[1], Jennifer Beecker[2], Peter Green[3], Lynne Robertson[4], Regine Mydlarksi[4]

[1]Department of Dermatology and Skin Science, University of British Columbia, Vancouver, BC
[2]Division of Dermatology, Department of Medicine; University of Ottawa; Ottawa, ON
[3]Division of Dermatology, Department of Medicine, Dalhousie University, Halifax, NS
[4]Division of Dermatology, Department of Medicine, University of Calgary, Calgary, AB

Introduction: Resource stewardship not only allocates appropriate resources to those who would truly benefit, but it also protects patients from the impact of unnecessary tests, treatments, and procedures. The need for resource stewardship has been highlighted in recent years through organizations such as the Choosing Wisely campaigns, which aim to eliminate ineffective practises by developing lists of dedicated recommendations per specialty.

Methods: In collaboration with the Canadian Dermatology Association (CDA), a working group was formed to develop a preliminary list of recommendations through a review of the literature, inspiration from International *Choosing Wisely lists*, and in consultation with a diverse task force of Canadian dermatologists. The proposed final Top Five list was then submitted to the CDA Board of Directors where it passed by majority approval.

Results: All presented recommendations have been approved by the CDA. One such presented recommendation is: "Don't routinely use topical antibiotics on surgical wounds", motivated by relative cost, risk of sensitization leading to contact dermatitis, and lack of evidence for its use in preventing wound infection. Each recommendation is accompanied by a detailed explanation of the rationale and a comprehensive list of evidence-based sources.

Conclusion: These recommendations have been developed to reinforce resource stewardship in Canadian dermatology. Future directions include further research and development, distribution for increased accessibility, and the development of easy-to-read patient materials on tests, treatments, and procedures related to their diagnosis. We hope these recommendations will be of high clinical utility and trigger meaningful conversation amongst dermatologists and patients alike.

Category: Pilot/Exploratory experiments

10:01 AM

INCORPORATING CLINICAL KNOWLEDGE INTO A DEEP NETWORK FOR 7 POINT-CHECKLIST EVALUATION

Yuheng Wang[1,2,3,4], Daniel C. Louie[1,2,3.4], Jiayue Cai[5], Z. Jane Wang[5,6] Harvey Lui[2,3,4], Tim K. Lee[1,2,3,4]

[1]School of Biomedical Engineering, University of British Columbia
[2]Department of Dermatology and Skin Science, University of British Columbia
[3]Photomedicine Institute, Vancouver General Hospital
[4]Departments of Cancer Control Research and Integrative Oncology, BC Cancer
[5]Department of Electrical and Computer Engineering, University of British Columbia
[6]School of Information Science and Technology, Northwest University, Xi'an, China

Background: The 7-point checklist is one of the most well-known and validated dermoscopic algorithms for melanoma detection. The algorithm consists of 7 criteria, three major criteria (atypical network, blue-white veil and atypical vascular pattern) and four minor criteria (irregular streaks, irregular dots, irregular blotches, and regression structures). Recently, several deep learning works have attempted to classify melanoma via the 7 content-based features simultaneously; however, these methods do not differentiate the major and minor criteria of the checklist.

Objectives: In this project, we implemented an improved deep network that fully utilized clinical domain knowledge to make use of the major and minor criteria of the checklist.

Methods: Paired dermoscopic images and clinical images were collected from 1011 lesions with their matched 7-points checklist annotations, from a publicly available dataset. Deep learning features were extracted using an auto-encoder based deep neural network and the features were classified into 7 criterion-classes independently. The major and minor criteria of the checklists were then observed and their orders were optimized in the final melanoma classification.

Results: The system achieved an average accuracy of 84% in detecting melanoma among non-melanoma lesions, outperforming state-of-the-art methods in the literature. In addition, the system can output the probability of melanoma from of each of the 7 criteria of a lesion individually. By implementing the clinical knowledge accumulated by experts and providing human-interpretable results, the proposed system would make the AI deep learning approach more interpretable and help improve diagnostic accuracy.

Category: Early experiments with well-defined objectives/hypotheses

10:09 AM

TOPICAL CHOLESTEROL AND LOVASTATIN FOR THE TREATMENT OF DISSEMINATED SUPERFICIAL ACTINIC POROKERATOSIS: A CASE SERIES

Angela Burleigh, Se Mang Wong and Brian Gregory

Department of Dermatology and Skin Science, University of British Columbia, Vancouver, BC, Canada

Disseminated Superficial Actinic Keratosis (DSAP) is the most common variant of porokeratosis and presents as pink to brown plaques with a fine linear scaly border on chronically sun-exposed skin. There is increasing evidence linking missense mutations in the mevalonate kinase gene (MKV) with both sporadic and familial cases of DSAP[1]. A recent case series highlighted the utility of topical cholesterol and lovastatin in the treatment of porokeratosis associated MKV mutations, including benefit in one case of DSAP[2].

We sought to determine the utility of topical cholesterol and lovastatin in an unselected population of patients with DSAP. Five patients with a clinical diagnosis of DSAP consented to treatment of a solitary affected limb and completed a one month course of twice daily therapy with 2% lovastatin and 2% cholesterol in white petrolatum. Patient global assessment of disease activity was assessed pre and post therapy. A single patient described significant improvement of the treated limb from "severe" to "almost clear". This patient had early onset of her DSAP in her third decade and two first degree relatives with DSAP indicating a strong genetic component. She was the only patient with early onset and a family history of DSAP. Two patients report improvement from "moderate" to "mild" disease and the final 2 patients had no change. There were no adverse effects reported from therapy.

Our case series provides support for the use of topical lovastatin and cholesterol in the treatment of selected cases of DSAP, with the greatest improvement noted when younger onset and strong family history was reported.

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Category: Early experiments with well defined objectives/hypotheses

10:17 AM

COMPUTERIZED LOCALIZATION AND TRACKING OF PIGMENTED SKIN LESIONS ON 3D WHOLE BODY TEXTURIZED SKIN MESHES

Mengliu Zhao*, Jeremy Kawahara* (* joint-first authors), Sajjad Shamanian, Kumar Abhishek, Ghassan Hamarneh

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While computerized approaches to classify skin conditions have shown the potential to reach a similar diagnostic performance as human experts using 2D color images, limited research considers using 3D whole-body skin images captured across time. 3D skin imaging provides context beyond a single localized photograph, such as the presence of multiple nevi (an important melanoma risk factor) and capturing the skin at multiple time points may allow for improved monitoring of lesion changes or the progression of treatments.

We propose a novel computational approach to detect and track lesions from 3D skin images. We map the 3D skin of human subjects to 2D texture images, train a deep region proposal artificial neural network to localize lesions within 2D texture images, and map the detected lesions to the 3D body. For subjects with multiple scans, we apply a matching algorithm to track lesions across time. We evaluated our method on three datasets. First, we scanned a mannequin with synthetic skin lesions under varying poses. Second, we augmented a dataset of 3D human meshes to produce 900 whole-body, skin-colored 3D meshes with different postures and lesions appearances. Finally, we also used a publicly available dataset of 3D scans that imaged the skin of real human subjects and manually annotated over 17,000 locations that appeared to the human eye to contain a pigmented skin lesion. We trained and tested our neural network using these manual annotations and achieved a recall of 0.84 and precision of 0.66 averaged per-scan.

Category: Early experiments with well defined objectives/hypotheses

11:25 AM

REVIEW OF EYE INJURIES ASSOCIATED WITH COSMETIC LASER DEVICES

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Background: Cosmetic dermatologic procedures using light or energy-based devices are increasing in popularity. During these procedures, the eye is susceptible to inadvertent damage due to the thin skin of the eyelids and the abundance of chromophores throughout.

Objective: Discuss ocular injuries associated with facial dermatologic laser treatments, the anatomy of the eye related to these procedures and highlight strategies to diminish the incidence of these injuries.

Methods: A PUBMED search was conducted to identify cases of eye injuries associated with dermatologic laser treatments.

Results: Forty-six cases of eye injury associated with dermatologic laser treatments were identified. In the majority of cases (34/46, 74%) no eye protection was used. In nearly all of the cases, the patient sustained the inadvertent ocular injury (39/46, 85%). The most common procedure was laser hair removal of the face (28/46, 61%). Together, the Alexandrite 755nm, Diode 800nm, Diode 810nm, and Nd:YAG 1064nm lasers were used in 35/46 (74%) of cases. The majority of cases (44/46, 96%) developed injuries specific to the affinity of the laser wavelength to the compatible chromophore-rich portion of the eye.

Conclusion: The majority of dermatologic laser-associated eye injury cases have occurred in the context of laser hair removal and are associated with inadequate use of eye protection. In most cases, the patient sustained the inadvertent ocular injury. Practitioners who perform these procedures should have appropriate ocular anatomy knowledge and laser safety training. Based on this review, we continue to recommend strict and appropriate ocular protection for all cosmetic laser procedures.

Category: Early Experiments

11:33 AM

LIGHT POLARIZATION INTERACTION WITH SKIN CONDITIONS ASSESSSED BY POLARIZATION SENSITIVE OPTICAL COHERENCE TOMOGRAPHY

Xin Zhou[1], Daniel C. Louie[2,3,4], Sina Maloufia[1], Lioudmila Tchvialeva[3,4], Shuo Tang[1], and Tim K. Lee[2,3,4]

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Background*:* Light polarization interaction with skin conditions has shown promising performance in some early investigations, such as superficial contrast enhancement and melanoma detection. The basic mechanism behind this interaction is yet unknow and its utility is not fully explored.

Objective: To explore the light polarization interaction with skin conditions by polarization sensitive optical coherence tomography (PS-OCT).

Methods: PS-OCT can offer four signal channels. The intensity channel visualizes the layered structure and surface roughness profile of skin in 3D. The degree of polarization uniformity (DOPU) can assess the depolarization which is related to micro-roughness. The phase retardation can characterize collagen organizations; the diattenuation signals are related to tissue anisotropic scattering and absorption. Different locations of skin are imaged. Skin conditions such as age, color, dryness, and roughness, are controlled and investigated. The experiment data will be compared with a model simulation based on polarization and scattering theory.

Results: All the different skin conditions can be viewed from the intensity images. A rough skin surface or a dark skin color will cause a low DOPU. Collagen degeneration due to skin aging and dryness can be assessed by a lower accumulation speed of phase retardation. A high anisotropy caused by aging and irregularities in other conditions can be detected from the diattenuation signals.

Conclusion*:* PS-OCT is a powerful tool to exam the interaction between light polarization and skin conditions. By recording four signal channels simultaneously into a multiple dimensional matrix, PS-OCT can offer a comprehensive examination in skin conditions.

Category: Early experiments with well-defined objectives/hypotheses

11:41 AM

ALLEVIATING POST-OPERATIVE PATIENT ANXIETY IN THE COVID-19 PANDEMIC: A MOHS SURGERY APP

Farah Kassam[1], Irèn Kossintseva[2]

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[2]Department of Dermatology and Skin Science, University of British Columbia, Vancouver, British Columbia, Canada

Background: Post-operative follow-up from Mohs surgery has been impacted by COVID-19. Patients are no longer seen unless an emergency. Our study aims to assess a need for a Mohs Surgery App to alleviate anxiety. The app would include photographs of categorized repairs at several time-points of recovery.

Methods: Telephone interviews were conducted with patients in two categories. Category A includes 2 sub-groups of pre-pandemic patients, while Category B includes 4 sub-groups of post-pandemic patients. Category A patients were seen in-person to manage their anxiety. Within Category A, two follow-up subgroups were selected: 6-months and 1-year pre-pandemic. Category B patients were not seen, unless a rare emergency. Within Category B, four follow-up subgroups were selected: 0-1, 3, 6 and 9-months post-Mohs. Thirty patients per sub-group, to a total of 180. All patients were recruited in a consecutive manner. A modified visual analog scale was used to assess post-operative anxiety.

Results: A total of 101 responses have been obtained so far, between March 2019 and January 2021. 51.5% were male and 48.5% were female. 75.2% indicated that they would find the proposed app helpful, while 24.7% indicated they would not. Patients cited factors such as access to follow-up with other community physicians, low post-operative anxiety, and technological barriers as reasons for not utilizing the proposed app. Demographic factors that may influence future app use include patient age and a history of prior Mohs surgery.

Conclusion: Three-quarters of our patients would derive benefit from the proposed Mohs Surgery App to alleviate post-operative anxiety.

Category: Early experiments with well-defined objectives/hypothesis

11:49 AM

M-CSF-STIMULATED CD11 b$^+$ MYELOID CELLS INDUCE ALOPECIA AREATA IN C3H/ HeJ MICE *VIA* ACTIVATING B LYMPHOCYTES

Yunyuan Li, Ruhangiz T. Kilani, Rana Alamdaran, Arveen Shokravi, Aziz Ghahary

Burn and Wound Healing Research Lab, Department of Surgery, UBC

Alopecia areata (AA) is an autoimmune skin disease with clinical features of hair loss and skin inflammation. Here, we revealed that dermal injection of either CD11b$^+$ myeloid cells isolated from AA-affected skin or non-AA splenocyte-derived CD11b$^+$ cells treated with macrophage colony-stimulating factor (M-CSF) induces AA in C3H/HeJ mice. The functional similarity of these cells in induction of AA seems to be due to a higher expression of M-CSF found in AA affected skin as compared to that of control. To explore the mechanism by which dermal injection of M-CSF-stimulated CD11b$^+$ cells induce AA, we have co-cultured either AA derived skin cells or M-CSF-stimulated CD11b$^+$ cells with naïve splenocytes. The results of a cell proliferation assay showed activation of splenocytes under both conditions. Most activated splenocytes co-cultured with M-CSF-stimulated myeloid cells were B lymphocytes. Furthermore, dermal injection of M-CSF-stimulated CD11b$^+$ myeloid cells increased the number of hair follicles. In conclusion, in this study, we have provided evidence that M-CSF stimulated CD11b$^+$ cells within the AA dermal lesions induces AA through B cell activation and that initiate a cascade of event lead to inflammatory

Category: Applied/Functional experiments (animal models of disease and *in vivo* studies).

11:57 AM

BEYOND SKIN DEEP: CASE-BASED ONLINE LEARNING MODULES TO IMPROVE THE UNDERSTANDING OF MULTIDISCIPLINARY CARE IN DERMATOLOGY AMONG STUDENTS

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Introduction: Canadian medical schools offer limited clinical dermatology training, and it is difficult for students to understand the strong relevance of dermatology to other areas of medicine. The objective is to evaluate the effectiveness of case-based online modules in improving the understanding of multidisciplinary care in dermatology among medical students.

Methods & Materials: Our team created nine case-based modules on skin conditions that overlaps with ten other disciplines. The modules are composed of multiple-choice questions with explanations, learning objectives, and take-home messages. Their content emphasizes multidisciplinary care in dermatology and centers around patients with different socioeconomic status and skin colors. 35 students were surveyed regarding perceptions of their dermatology curriculum. 20 of them with interests in 17 specialties completed the modules and a survey afterwards.

Results: Only 11.4% of 35 students feel their dermatology education is sufficient, and 73.5% did not feel comfortable seeing patients with skin conditions in clinical settings. All 20 students who completed the modules found the format fits their learning style. Over 90.0% agree that the modules enhanced their knowledge and would help them manage skin conditions in clerkship. 85.0% agree that the modules enhanced their understanding of the multidisciplinary nature in the management of skin conditions in each case.

Conclusion: These findings indicate a need for additional dermatology education for students. Case-based online modules are effective tools to help students better understand the multidisciplinary care in dermatology and provided insight into ways of providing dermatology education for medical students when clinical teaching resource are limited.

Category: Early experiments with well-defined objectives/hypotheses

12:05 PM

PATIENT SATISFACTION SURVEY AT A VANCOUVER PATCH TESTING CLINIC: A TOOL FOR QUALITY IMPROVEMENT

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[2]St. Paul's Hospital, Division of Dermatology

Introduction

Allergic contact dermatitis (ACD) is a subtype of contact dermatitis characterized by a delayed hypersensitivity eczematous skin reaction to exogenous agents that contact the skin. Patch testing, a specialized test to identify contact allergy, is used to help decrease the burden of eczematous dermatitis in patients with ACD. Here in British Columbia, the Contact Dermatitis Clinic at St. Paul's Hospital is the only dermatology clinic that conducts a comprehensive 80 allergen screening series recommended by the American Contact Dermatitis Society, in addition to supplement allergen testing specific to each patient. Through a satisfaction questionnaire, we aim to describe patient outcomes and identify quality improvement opportunities.

Methods and Results

A 10-question survey was used to collect feedback from 1,226 patients that were patch tested from November 2016 to April 2020 via UBC Qualtrics survey platform. Using both validated Likert scale and open-ended responses, we aimed at assessing four main quality improvement areas: pre-test preparedness, accessibility, identification of allergens, and outcomes. A response rate of 23% (277 completed) was achieved. Overall, patients reported a high degree of satisfaction with pre-test preparedness, allergen identification, and outcomes, with 71% of patients having an allergen identified. Of those who identified as having a positive allergen, 62% (128/205) indicated their rash improved after patch testing. Top allergens identified included fragrances, metals, preservatives (i.e. methylchloroisothiazolinone and methylisothiazolinone), and topical antibiotics. Thematic analysis of open-ended responses found that barriers to patch testing included long wait times, non-Canadian specific allergy avoidance strategies, and lost to follow up.

Conclusion

Patch testing had an appreciable effect on quality of life (QoL) of patients who have ACD, including improvement of cutaneous symptoms. Future QoL opportunities include increasing access to patch testing, the need for more Canadian-specific product avoidance resources, increase follow up including education on non-ACD causes of dermatitis, and the need for ACD-specific QoL assessment tools.

12:13 PM

SECONDARY INTENTION HEALING OVER EXPOSED BONE FOLLOWING MOHS MICROGRAPHIC SURGERY

Noelle Wong[1], David Zloty[1]

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Background: Removal of aggressive/longstanding skin cancers with Mohs Micrographic Surgery can result in deep post-surgical defects with exposed bone. In such cases, repair options become challenging due to limited vascularity for standard flap or graft repair. A viable alternate approach is secondary intention healing over exposed bone.

Objective: Demonstrate the utility of secondary intention healing of defects with exposed bone.

Methods/Materials: This is a retrospective case series of 41 patients who had Mohs Micrographic Surgery from July 2010 to January 2020 with post-surgical defects involving exposed bone. These patients then underwent healing by secondary intention rather than active surgical reconstruction.

Results: 90% of patients successfully healed by secondary intention over exposed bone, with 59% having partial loss of periosteum and 41% having full loss of periosteum. Average time to complete granulation was 92 days, and average time to full re-epitheliazation was 186 days. Visual assessment of quality of the final scar resulted in 56% being good, 27% being fair, and 7% being poor. 10% of patients did not successfully heal by secondary intention and were referred to Plastic Surgery for further intervention.

Conclusion: This case series helps to show the utility of secondary intention healing of wounds with exposed bone. It highlights the unpredictability of which patients are able to successfully heal by secondary intention despite factors such as radiation, smoking, diabetes, large defect size, lack of emissary veins, or lack of periosteum. Managing patient expectations and emphasizing importance of good early quality of wound care is important for success.

Category: Early experiments with well-defined objectives/hypotheses

12:21 PM

THE IMPACT OF COVID-19 ON NORTH AMERICAN DERMATOLOGY PRACTICES

Misha Zarbafian[1], Danny Guo[2], Jeffrey Dover[3], Shannon Humphrey[1,4]

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In March 2020, there was mandated closure of non-essential services in many areas across North America, with gradual re-opening as new safety measures and practice guidelines were implemented. Even today, COVID-19 continues to affect the delivery of healthcare services. Specifically in dermatology, clinical care is delivered in close physician-patient proximity through physical exam and use of additional diagnostic and therapeutic procedures. We designed a short quantitative and qualitative survey to better understand how COVID-19 has impacted the delivery of care in North American dermatology practices. This survey was composed of 10 questions examining changes in patient volumes, the use of virtual visits/teledermatology, the frequency of aesthetic and surgical procedures, and other related topics. We identified 102 board-certified dermatologists working in a variety of medical, aesthetic, surgical, and mixed practices, selected based on their geographic location and our ability to access their contact information. Each dermatologist was invited to participate through a personalized e-mail with an anonymized survey link hosted through Qualtrics XM. The survey was viewed by 71 dermatologists and completed by 54 in the 2.5 weeks after distribution. A second wave of e-mails was sent to the remaining 48 dermatologists who had not yet completed the survey, after which 15 participants both viewed and completed the survey. In total, 69 responses were recorded with an overall response rate of 67.6%. The data is currently being analyzed. Understanding the full scope of the impact that COVID-19 continues to have on dermatologic care is paramount to effectively serving our patients.

Category: Early experiments with well-defined objectives/hypotheses

12:29 PM

UBC RURAL AND REMOTE DERMATOLOGY: A PROGRESS REPORT

Nathan Teegee[1], Catherine Lim[4], Gabrielle Serafini[2], Rich Lester[2,3], Meghan Donaldson[5], Neale Smith[5], Craig Mitton[5], Neil Kitson[1]

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We set out to test a model of telemedicine using the Northern Interior division of Northern Health, and set it against the control, the Northeast and Northwest divisions. The COVID-19 pandemic and rapid adoption of Zoom teleconferencing forced a change in our service and impacted our design so that all rural areas in BC were the 'experimental site'. This also included all First Nations communities consulting via the FNHA Doctor of the Day program. Our qualitative and quantitative results will be discussed. These will include month-to-month call volume, location analysis, preferred methods of communication and most common diagnoses encountered. Preliminary results will be presented from interviews with rural practitioners using the service. Referrals have come from most Health Authorities including communities such as Dease Lake, Fort Nelson, Fernie, and Port Hardy. We believe our methods of assessment (still being developed) could be adapted for quality assessment. We will present our argument and evidence that this model of service - which is not limited to our specific methods - can and does fulfill an unmet need.

Category: Early experiments with well-defined objectives/hypotheses

12:37 PM

POLARIZATION MEMORY RATE: A NEW OPTICAL BIOMARKER FOR SKIN CANCER DETECTION

Daniel C. Louie[1,2,3], Lioudmilla Tchvialeva[2,3], Sunil Kalia[2,3], Harvey Lui[2,3,4], Tim K. Lee[1,2,3,4]

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[3]Photomedicine Institute, Vancouver Coastal Health Research Institute
[4]Departments of Cancer Control Research Program and Integrative Oncology, BC Cancer

Background and Objectives: Discriminating between cancerous and benign tissue requires examining tissue features on a cellular level. The current gold standard is to identify histopathological features, but optical technologies provide ways to detect these features faster and non-invasively. This presentation introduces a new optical biomarker for cancer detection called the polarization memory rate (PMR). The polarization of light waves refers to the orientation of their intrinsic oscillations. Polarization includes linear and circular directions of oscillation, and light can range from uniformly polarized to randomly depolarized.

Hypothesis: The nucleus is the primary scatterer within the cell, and in cancerous cells the nucleus is larger and denser. In terms of optical properties, this results in cancerous cells having a higher index of refraction. It has been demonstrated that scatterers with higher indices of refraction depolarize linear polarized light to a greater extent than circular polarized light. PMR is the ratio between circular and linear depolarization, and we hypothesize that this metric can be a sensitive detector for cancerous tissue.
Methods: A literature review of experimental PMR observations across multiple tissue types revealed the theoretical basis for this biomarker. Bringing this theory to practice, cancerous and benign skin lesions were measured by a prototype polarimetry probe to assess their differences in PMR.

Conclusion: Polarization memory rate has been found to be measurable on skin tissue *in vivo*, and sensitive enough to allow for discrimination on *in vivo* skin tissue samples. Future work will focus on the creation of a more rigorous device to more fully observe this polarization biomarker.

Category: Pilot/Exploratory experiments

12:45 PM

THE IMPACT OF COVID-19 ON THE DIAGNOSIS OF MELANOMA IN BRITISH COLUMBIA

Marie O'Connor[1], Richard I. Crawford[1,2]

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Melanoma is a potentially deadly skin cancer. When a concerning pigmented lesion is found on the skin, efficient detection, biopsy and excision are important. When there are delays in the management of melanoma, patients and the health care system experience increased morbidity, mortality and costs.

On March 17th, 2020, a public health emergency was declared in British Columbia due to the global COVID-19 pandemic. Much of the healthcare system was affected, with thousands of cancelled surgeries and appointments. Many dermatologists and primary care providers switched to a predominantly virtual care model in an attempt to decrease spread of the virus. It is also likely that certain patients avoided seeking medical care due to a fear of contracting the virus.

The impact of the COVID-19 pandemic on patient outcomes remains to be determined. We hypothesize that the COVID-19 pandemic will result in a lower number of biopsies of melanoma and a higher number of patients with more advanced melanoma at diagnosis. To address these hypotheses, we have conducted a retrospective review of pathology reports for melanomas diagnosed in the BC lower mainland, comparing the period March-Oct 2019 to March-Oct 2020.

The results of this study provide insight into the impact of the COVID-19 pandemic in British Columbia. This will help with understanding the adaptability of the healthcare system in BC, provide planning information in anticipation of future pandemics, and also provide planning information for potential future increases in advanced melanoma diagnoses.

Category: Early experiments with well-defined objectives/hypotheses

POSTER PRESENTATION ABSTRACTS

10:40 AM – 11:10 AM

RATIONALIZING PHOTOTHERAPY SERVICES DURING THE COVID-19 PANDEMIC: STRATEGIES AND IMPACTS ON PATIENT ACCESS AND OUTCOMES

Tashmeeta Ahad[1, 2], Sunil Kalia[1, 2, 3, 4], Harvey Lui[1, 2]

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[3]Department of Cancer Control Research, BC Cancer, Vancouver, Canada
[4]BC Children's Hospital Research Institute, Vancouver, Canada

Background: Public health directives throughout COVID-19 have significantly constrained phototherapy services. At our centre, phototherapy was unavailable from March-June 2020, and then resumed at 50% capacity.

Objectives: We will assess the impacts of COVID-19 on patient outcomes and the efficiency of rationalization strategies utilized to optimize service delivery.

Methods: To objectively prioritize patients, nursing staff were trained to assess disease severity using a validated Investigator Global Assessment and Body surface area (IGAxBSA) scoring tool. Dermatology Life Quality Index (DLQI) questionnaires were completed by patients. Patients were treated using phototherapy regimens incorporating curtailed treatment frequencies (once or twice a week) over 10-week cycles, with higher incremental dosing (up to 20%).

Results: A total of 657 patients were undergoing phototherapy prior to clinic closure. Proportion of contacted patients declining phototherapy following re-opening was 31% (n=142). Baseline assessment of patients with psoriasis (n=192) and eczema (n=71), revealed median IGAxBSA scores of 20 (psoriasis) and 24 (eczema). Capacity modelling revealed a 75% cumulative percentile of IGAxBSA scoring distribution as the most optimal threshold for choosing treatment frequency. Based on this, patients had twice weekly treatment if IGAxBSA scores were ≥30 (psoriasis) and ≥40 (eczema). DLQI ≥21 (extremely large effect on quality of life) qualified for twice weekly treatment regardless of disease severity. Preliminary analysis on efficacy after ten weeks showed median IGAxBSA scores of 9 (psoriasis; n=129) (55% median improvement) and 16 (eczema; n=40) (33% median improvement).

Preliminary Conclusions: Our ongoing review will provide unique insights into the efficacy of objective service rationalization strategies.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

BIASING OF ACTIVATED PROTEIN C FUNCTION TO ACCELERATE CUTANEOUS WOUND HEALING

Frank M.H. Lee[1,2,3,4], Scott Meixner[2,3,4], Edward L.G. Pryzdial[2,3,4]

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The serine protease activated protein C (APC) possesses dual functions as a vital anticoagulant and a cytoprotectant. In human pilot studies, topical and subcutaneous injection of APC has been shown to accelerate healing of cutaneous ulcers in poorly managed diabetes, pyoderma gangrenosum and chronic pressure sores. The regenerative functions of APC are attributed to its anti-inflammatory, anti-apoptotic and stabilization of epithelium. These cytoprotective effects are thought to be mediated by cleavage of protease-activated receptor 1 (PAR-1) expressed on differential cell types throughout the integument. Recombinant engineering of APC variants within the autolysis loop that possess no anticoagulant activity but preserved PAR-1 signaling are just entering larger clinical trials. Work from our lab has isolated a new physiologic pathway that biases APC activity towards PAR-1 signaling. Cleavage assays with N-terminal sequencing analysis and functional biochemical assays show that the enzyme plasmin proteolyzes APC within the autolysis loop and impairs anticoagulant function with no effect on PAR-1 signaling. Our findings parallel findings with engineered APC variants and implicate an alteration in APC activity with modulation of the autolysis loop. Plasmin has been shown to play an important regulatory role in wound healing by inducing keratinocyte migration and remodeling of the extracellular matrix. We believe that the functional modulation of APC by plasmin plays an important regulatory role in wound healing. Further dissecting this pathway may provide novel and exciting insights into the management of chronic wounds. This will ultimately further our understanding to develop new applications to accelerate the wound healing process.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

RISK FACTORS FOR SKIN CANCER IN BC

Jenny Lee[1, 2, 3], Tim Lee[1, 2, 3], Tashmeeta Ahad[1, 2], Jianhua Zhao[1, 2, 4], Harvey Lui[1, 2, 4], Haishan Zeng[1, 2, 4], Sunil Kalia[1, 2, 3, 5].

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Background and Objectives: Risk prediction models can potentially aid in screening high risk patients. Most skin cancer prediction models are based on populations with high skin cancer incidences such as in Australia and therefore may not be generalizable to other populations. Also, previous studies have not adequately assessed clinical risk factors in their models. We aim to develop skin cancer risk prediction models incorporating clinical histories that are directly applicable to the North American population.

Methods: This is a case-control study from patients at the Skin Care Centre in Vancouver. Risk factor data (demographics, environmental exposures, medical history, phenotypic features, and sun exposure) is collected and used to develop skin cancer risk prediction models via logistic regression modeling.

Preliminary Results: A total of 299 patients have been recruited. 160 patients had ≥1 skin cancers, which include melanoma = 37, basal cell carcinoma (BCC) = 119, and squamous cell carcinoma (SCC) = 45, and 139 controls. Univariate regressions showed significant odds ratios to be: 6.91 (1.97-26.1), 5.21 (2.37-12.0), and 2.11 (1.03-4.26) for >20 adult sunburns, few freckles, and some/many nevi respectively for melanoma; 8.69 (2.68-39.3), 7.17 (4.06-13.3), 3.92 (1.60-10.1), and 3.43 (1.94-6.21) for many lentigines, history of actinic keratoses, >20 childhood sunburns, and age 71+ respectively for BCC; and 9.66 (3.64-33.5), 4.95 (2.17-13.4), and 3.51 (1.24-9.89) for age 71+, history of actinic keratoses, and 11-20 adult sunburns respectively for SCC.

Preliminary Conclusions: Univariate regression modeling demonstrates there are characteristics that will allow risk prediction models to identify high-risk skin cancer patients.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

TOPICAL APPLICATION OF A NOVEL POWDERED SCAFFOLD FOR RAPID TREATMENT OF SKIN INJURIES

Myriam Verly[1,3], Emily Mason[3,4], Reza Jalili[2,3], Breshell Russ[3], Ruhangiz Kilani and Aziz Ghahary[2,3]

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Introduction: Limitations to skin-substitutes include antigenicity, poor wound integration, and precarious mechanical properties. To address these, our group previously developed an *in situ*-forming nutritional scaffold proven to accelerate wound repair. Due to its gel-like properties, this scaffold is optimized for cavernous wounds and requires a time-consuming reconstitution process. This study investigated whether a powdered form of this scaffold could accelerate healing of superficial wounds, thus broadening the range of applications while providing a ready-to-use product.

Materials and Methods: Splinted full-thickness wounds were generated on the backs of 12 mice and treated with either powder, the original gel scaffold, or no treatment (NT). Efficacy of the powder scaffold was assessed though comparison of clinical wound measurements and histological assessments.

Results: Powder application promoted wound epithelialization at days 7 ($p < 0.05$) and 14 ($p < 0.01$) compared to NT. Powder treated wounds were completely healed 20% faster than untreated wounds. Although no significant difference in wound epidermal thickness (ET) or dermal cellularity were found between treatments, both the ET and dermal cellularity in the tissue adjacent to the wounded tissue were significantly decreased ($p < 0.05$) compared to NT.

Conclusion: These results suggest that this powder scaffold may outperform standard wound dressing protocols and the native gel scaffold by accelerating wound closure while displaying fewer signs of aberrant healing. Through a rapid *in situ*-reconstitution that conforms to wound topography, this powdered scaffold may improve upon current models by providing a ready-to-use product that accelerates healing of superficial wounds.

Category: Applied/Functional Experiment

10:40 AM – 11:10 AM

ALLERGIC CONTACT DERMATITIS CAUSED BY TOPICAL MEDICAMENTS

Jamie Phillips[1], Gillian de Gannes[1,2], Charles Choi[3], Saba Vafaei-Nodeh[3]

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Topical medicaments are an increasingly frequent cause of allergic contact dermatitis (ACD), with the relative contribution of specific allergens constantly evolving due to the introduction of new products and shifts in their usage. Geographic variability is also seen due to the regional availability of certain products. Our objective was to characterize local trends in ACD to topical medicaments. A retrospective chart review was performed for patients patch tested at St. Paul's Hospital in Vancouver, BC between November 2016 and June 2019. Data from the North American Contact Dermatitis Group from 2015-2016 and Ottawa Patch Test Clinic from 2000-2010 were also reviewed. We focused on 12 allergens found in topical medicaments, including 3 antibiotics, 6 corticosteroids, 2 anesthetics and propylene glycol. Topical antibiotics remain the most common cause of medicament-induced ACD, making up 50.7% of the positive results in our study, with bacitracin being the most frequent. Lidocaine and benzocaine were the 3rd and 7th most common allergens, respectively. Propylene glycol was the 4th most common allergen, seen in 13.3% of patients testing positive to at least one of the 12 allergens, and in 1.8% of all patch-tested patients. For the 12 allergens under study, corticosteroids made up 18.3% of the positive reactions, with the most common being tixocortol pivalate (8.4%) and budesonide (5.6%). Cosensitization rates (number of cases positive to more than one allergen) were highest for the antibiotics: neomycin (22.9%), bacitracin (20%) and polymyxin B (18.6%).

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

VIEWING THE MICROSCOPIC SKIN WOUND HEALING RESPONSES TO PRECISE SELECTIVE PHOTOTHERMOLYSIS USING NON-INVASIVE MULTIMODALITY MICROSCOPY AND IMAGING GUIDED MICRO-RAMAN SPECTROSCOPY

Shujian Li[1,2,3], Yuxian Tian[1,2,3], Zhenguo Wu[1,2,3], Jianhua Zhao[1,2,3], Harvey Lui[1,2,3], Sunil Kalia[1,2,4,5], Haishan Zeng[1,2,3]

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[5]BC Children's Hospital Research Institute, Vancouver, Canada

Background and Objective: The ability to restore tissue architecture and function after an injury is critical to health maintenance. Previous studies established that skin repair system involves specific and simultaneous processes for epithelial regeneration and dermal modification. In this study, we will investigate the specific events occurring during skin wound healing after highly targeted micro-injury.

Materials and Methods: A tightly focused ultrafast laser beam will be directed to flexural forearm skin to generate separate micro-thermal injuries in the epidermis and dermis, respectively. The treatment power will be set at 400 mW and the exposure time 2 s. Then a multimodality microscope which incorporates two photon fluorescence (TPF) signal, second harmonic generation (SHG), and confocal reflectance microscopy (RCM) is used to monitor cellular morphological changes and tissue architectural modifications. Imaging guided Micro-Raman Spectroscopy will be used to detect biochemical changes. The measurements will be taken at 7 time points, including: immediately after, 3hrs, 1 and 3 days, 1, 2, and 4 weeks after laser treatment.

Preliminary Results: The TPF signal of the treated area appears to be significantly increased immediately after the laser micro-injury. The fluorescence was still high at 1 week following treatment with gradual decrease in the intensity afterwards. No obvious collagen remodeling and dermal structural changes was recorded during the first week after treatment. Starting from 1 day following the laser treatment, small enhanced TPF points can be observed possibly due to the recruitment of inflammatory cells to the damage site.

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

HERPETIFORM STREPTOCOCCAL SKIN INFECTION IN CHILDREN: A REPORT OF 2 CASES

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[2] Department of Dermatology, Department of Paediatrics, University of British Columbia

Background: Acute skin and associated skin structure infections (SSSIs) are extremely common in children and can have a wide range of presentations from impetigo to necrotizing fasciitis. Specimens for cultures are often not taken and, even if an infection is suspected, antibiotic coverage is often empiric. Misdiagnosis of superficial skin infections and lack of recognition of bacterial superinfection can lead to delays in treatment and various sequelae can result if these SSSIs are left untreated.

Case descriptions: We report the cases of 2 patients who presented to an academic emergency department with herpetiform skin lesions and were subsequently referred to paediatric dermatology for further management. Due to the herpetiform appearance of the lesions, eczema herpeticum was considered in one case and dermatitis herpetiformis was considered in the other. Both were found to have Group A *streptococcus* skin infections and were appropriately treated.

Conclusion: These cases highlight the importance of performing swabs for bacterial culture to properly identify streptococcal infections when crusted herpetiform lesions are present. Proper treatment is important to prevent complications of streptococcal infections including rheumatic fever and post-streptococcal glomerulonephritis.

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

INTERFOLLICULAR DISTANCE: A NOVEL METRIC FOR ASSESSMENT OF HAIR FOLLICLE DISTRIBUTION ON THE SCALP

Ali Majd, MD[1], Tim K. Lee, PhD[1,2]

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Average hair density and hair diameter are two quantitative parameters that are often measured serially by trichometry in patients presenting to specialized hair disorder clinics. Both parameters contribute to the global appearance of hair loss on the scalp. However, neither parameter directly takes into account the spacing between follicular units. As such, follicular units that are clustered in very close proximity to one another, and those that are at notable distances from one another, could result in the appearance of focal or diffuse hair loss due to increased distance. We have devised a technique to compute the mean distance between all hair follicles in a trichoscopy image. In this proof of concept study, we have assessed this metric in various trichoscopy images that were acquired from patients with varying hair disorders. This metric has also been computed for various simulated scenarios to demonstrate how it can complement measurements of hair diameter and hair density. Finally, we have devised a mathematical model to yield the most ideal distribution of follicular units in a trichoscopy image. This model provides uniform spacing between follicular units in order to minimize the appearance of focal or diffuse hair loss. This metric may be able to supplement hair density and hair diameter measurements in the diagnosis of androgenetic alopecia. Furthermore, its use could be implemented in hair transplantation clinics to aid in hair follicle placement planning.

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

PROPYLENE GLYCOL: A COMMON INGREDIENT IN TOPICAL CORTICOSTEROIDS AND ITS ROLE IN ALLERGIC CONTACT DERMATITIS

Matthew Roberts[1], Gillian de Gannes[1,2]

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Background: Functioning as a solvent, humectant, emulsion stabilizer, preservative or antimicrobial, propylene glycol is a commonly used ingredient in cosmetics, personal care products, foods, and medications, including many topical corticosteroids. In sensitized individuals, it causes allergic contact dermatitis. Thus, the use of topical corticosteroids with this ingredient will complicate the treatment course of steroid-responsive conditions in sensitized individuals.

Objectives: To identify all topical corticosteroid products currently available in Canada that are propylene glycol free.

Methods: Using product monographs, with confirmation via product labels, and/or direct communications with manufacturers, we identified all propylene glycol-free topical corticosteroids preparations available in Canada in 2021.

Results: Out of 106 topical corticosteroid products made by various manufacturers, 24 products without propylene glycol were identified. We have created a practical clinical resource for practitioners to identify suitable topical corticosteroid treatment options for individuals with contact allergy to propylene glycol.

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

TERT PROMOTER MUTATIONS IN AMBIGUOUS MELANOCYTIC LESIONS

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Background: While the majority of melanomas can be distinguished from melanocytic nevi histologically, a subset of lesions are difficult to classify. An adverse outcome (recurrence, regional or systemic metastasis) occurs in 1-4% of these ambiguous melanocytic proliferations (AMPs). Recurrent TERT promoter mutations are reported in up to 65% of primary cutaneous melanomas but are rare in melanocytic nevi. Four hotspot mutations that create new transcription factor binding sites are predominant. Recent studies suggest that TERT promoter mutation status distinguishes melanoma from benign nevi with an accuracy approaching the current melanoma FISH assay. However, the predictive value in AMPs has not been established.

Objectives: The aim of this study is to determine whether TERT promoter mutations correlate with aggressive behavior in AMPs.

Methods: Cases meeting inclusion criteria of an AMP with >5 years of clinical follow-up are being identified by database search that includes hospitals across British Columbia. Histologic diagnosis and presence of sufficient residual tumor tissue are confirmed prior to DNA extraction and mutational analysis. Associations between mutation status and clinicopathologic features are determined by statistical analysis.

Preliminary Results: Ongoing chart review thus far returned 12 cases of AMPs with adverse outcome. DNA was extracted from three cases and yielded sufficient material for molecular analysis. A TERT promoter hotspot mutation c.228C>T was detected in one of the AMP samples.

Overall, these studies will help to determine the potential of TERT promoter mutation testing as a rapid and cost effective molecular tool for the diagnosis of ambiguous and unpredictable melanocytic proliferations.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

UNIVERSITY OF BRITISH COLUMBIA RURAL AND REMOTE DERMATOLOGY – DESCRIBING CONSULT CHARACTERISTICS AND PATIENT DEMOGRAPHICS FROM MAY TO DECEMBER 2020

Catherine Lim[1], Nathan Teegee[2], Meghan Donaldson[3], Neale Smith[3], Craig Mitton[3], Neil Kitson[2]

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[3]Centre for Clinical Epidemiology and Evaluation, Vancouver Coastal Health Research Institute, Vancouver, Canada

We present preliminary results from a trial of telemedicine for small communities defined by the Rural Subsidiary Agreement (February 2020). The model had three components: telemedicine, working relationships, and education. Telemedicine between consulting dermatologists and referring family physicians were conducted by phone, text, teleconference, and email. Patient charts were held by a central Electronic Medical Record system (MedAccess). Privacy and confidentiality standards conformed to British Columbia (BC) legislation for "public bodies" (Freedom of Information and Protection of Privacy Act) with some exceptions allowed by a BC Public Health Order, which can be amended in the future. Data presented here are from May to December 2020. We highlight month-to-month call volume, billing data, patient population, most common diagnoses, Global Positioning System (GPS) location analysis (including distance to the nearest dermatologist), and referring provider method of contact. We will also present some early findings from telephone interviews with referring providers (about 50 to date). The evaluation of the latter two components, working relationships and education, will be later investigated.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

AN OPTICAL INSTRUMENT FOR IMAGING-GUIDED BIOCHEMICAL ANALYSIS OF MICROSCOPIC SKIN TISSUE STRUCTURES *IN VIVO*

Zhenguo Wu[1,2], Liwei Jiang[1,2], Jianhua Zhao[1,2], Harvey Lui[2], Haishan Zeng[1,2]

[1] Photomedicine Institute, Department of Dermatology and Skin Science, University of British Columbia & Vancouver Coastal Health Research Institute, Vancouver
[2] Imaging Unit, Integrative Oncology Department, BC Cancer Research Centre, Vancouver

Raman spectroscopy is an optical modality that captures highly specific spectral fingerprints of molecules thereby allowing their identification. It has been used for noninvasive skin cancer diagnosis, skin hydration analysis, barrier function assessment, drug penetration monitoring, and other skin related studies. Among various *in vivo* investigations, there are limited studies correlating microscopic tissue morphology of skin with corresponding Raman spectra, which would be helpful for detecting and analyzing the biochemical components that underlie *in vivo* cutaneous structures. To study this correlation confidently, two challenges must be addressed. First, the structure needs to be located and measured at the same time. Secondly, the Raman spectra acquired should cover the whole structure instead of a point to be representative. We are aiming to develop a confocal Raman spectroscopy (CRS) system for measuring histologic regions of interest with any shape under the visual guidance of reflectance confocal microscopy (RCM). This system integrates an RCM with a CRS measurement module. The RCM is used to optically section the skin and acquires skin tissue morphology data in real-time; specific tissue structures in any shape (e.g. point, line, curve, circle) can be selected and the corresponding Raman spectra measured simultaneously. The system's single field of view will cover 300 μm x 300 μm. The spatial resolution for the imaging and Raman measurement module will be 1.5 μm and 4 μm. The penetration depth will be 200 um. The system will be tested for skin capillary blood analysis and skin cell type differentiation.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

CRISABOROLE 2% OINTMENT VS CLOBETASOL 0.05% OINTMENT FOR TREATMENT OF PEDIATRIC CHRONIC HAND DERMATITIS

Julia Mayba[1], James Bergman[1], Yuebo Yang[2]

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[2]University of British Columbia Faculty of Medicine, Vancouver, Canada

In clinical practice, dermatologists have noted a favourable response treating pediatric chronic hand dermatitis using crisaborole 2% ointment. Chronic hand dermatitis often necessitates treatment with high potency topical steroids, which long-term may be associated with various adverse side effects. We plan to examine the efficacy of crisaborole 2% ointment compared to clobetasol propionate 0.05% ointment for the treatment of pediatric chronic hand dermatitis. A prospective controlled single blinded clinical study design will be used to compare crisaborole to clobetasol, whereby patients will apply clobetasol propionate 0.05% ointment BID to one hand and crisaborole 2% ointment BID to the other hand, for a total of 3 months. The patient will be assessed at the first visit by the dermatologist with the "Hand Eczema Extent Score" and the "Investigator Global Assessment" evaluations. Every month thereafter for 3 months the patient will be reassessed with the same evaluations. After 3 months, we will compare the changes in the scores at baseline to 1- 2- and 3- months post-initiation of treatment to determine if there is a statistically significant difference in the two treatment arms. The two treatment arms will be compared using a two-sample T-test. We hope this clinical study will provide more objective data to confirm or refute the clinical observation that crisaborole 2% ointment may be as effective as clobetasol propionate 0.05% in treating pediatric chronic hand dermatitis.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

COMPARING THE BRITISH COLUMBIA CANCER REGISTRY TO HEALTH ADMINISTRATIVE CLAIMS-BASED ALGORITHMS FOR ASCERTAINING KERATINOCYTE CARCINOMA

Thomas JX Zhang[1,2,3], Tim K. Lee[1,2,3], Harvey Lui[1,2,3], Jan Dutz[1,4], Sunil Kalia[1,2,3,4]

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[4]Division of Dermatology, British Columbia Children's Hospital Research Institute, Vancouver, British Columbia

Keratinocyte carcinomas (KCs), comprising basal or squamous cell carcinomas, are the most common human malignancy in North America. The BC Cancer Registry coded and recorded all pathologically confirmed KC cases between 1970 and 1994 and then again in 2003. We aim to compare methods of KC ascertainment using previously validated health insurance claims-based algorithms to the BC Cancer Registry data, in the study period of the years January 1, 1992 to December 31, 1993, and January 1, 2002 to December 31, 2003. The Medical Services Plan and the BC Cancer Registry databases will be accessed within the Population Data BC system to identify KCs and this will be compared to the number of cases ascertained via claims-based algorithms. Ascertainment performance will be calculated (sensitivity, specificity, positive predictive value, negative predictive value). From these ascertainment approaches, we will derive descriptive statistics for skin cancer incidence. We hypothesize that MSP claims will be a reasonable surrogate for the "gold standard" (histopathological confirmation) in identifying KCs. PopData and claims-based algorithms can be used to assess healthcare burden of KCs in future epidemiologic studies.

Category: Early experiments with well-defined objectives/hypotheses

10:40 AM – 11:10 AM

IS VITAMIN D ASSOCIATED WITH CONGENITAL ICHTHYOSIS? A LITERATURE REVIEW FOR GUIDANCE IN MANAGEMENT

Ian T.Y. Wong[1], Joseph M. Lam[1,2]

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[2]Department of Pediatrics, University of British Columbia, Vancouver, Canada

Background: Congenital ichthyoses are a group of conditions that exhibit an impaired epidermal barrier due to mutations and are characterized by extensive scaling, hyperkeratosis and abnormal desquamation. Vitamin D deficiency is not uncommon in congenital ichthyoses, however, there is a paucity of knowledge within the literature on whether vitamin D supplementation or treatment can help manage the cutaneous manifestations of congenital ichthyoses. Current management strategies are limited and varying in success.

Objective: This review aims to scope the current state of knowledge on the clinical impact of vitamin D supplementation or treatment in individuals with congenital ichthyoses and to assess how vitamin D can be integrated in the management armamentarium for individuals with congenital ichthyoses.

Results: 7 published reports were included and reported on 19 patients with congenital ichthyosis. A large proportion of reported cases of congenital ichthyosis were also co-morbid with rickets requiring vitamin D_3 supplementation. With vitamin D_3 administration at high-dose or supplemental-dose, many cases reported clinical cutaneous improvement.

Conclusion: Checking vitamin D levels in patients with congenital ichthyoses may reveal a vitamin D deficiency. Vitamin D3 supplementation may not only improve biochemical homeostasis, but also, may improve cutaneous manifestations of congenital ichthyoses. High-dose vitamin D3 may be more effective than supplementation dose vitamin D in providing cutaneous benefit in individuals with congenital ichthyoses. Vitamin D3 is a safe option for vitamin D3 deficient patients with congenital ichthyosis and may be a useful adjunct therapeutic option to current management strategies.

Category: Pilot/Exploratory experiments

10:40 AM – 11:10 AM

MANAGEMENT OF PEDIATRIC STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Danny Mansour, MD,[1] Ashley M. Yu, MD,[2] Brandon Worley, MD,[3,4] Amin Bahubeshi, MD,[3] Kenneth Tang,[4] Neil H. Shear, MD,[5] Elena Pope, MD, MSc,[6] Michele Ramien, MD[7]

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Treatment of Stevens-Johnson Syndrome (SJS) and toxic epidermal necrolysis (TEN) in children is challenging because of insufficient evidence to support one adjuvant treatment over another. We conducted a systematic review to summarize causes and disease associations of pediatric SJS, SJS-TEN overlap, and TEN (SJS/TEN) and quantify adjuvant treatment effects on mortality and healing time. The Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, and the Database of Abstracts of Reviews of Effects were searched through February 2018. All studies with at least one patient up to 18 years old diagnosed with SJS/TEN reporting at least one outcome of interest were included. Two reviewers assessed studies' eligibility, risk of bias and performed data extraction according to PRISMA and MOOSE guidelines. A robust standard errors model was used for data synthesis. The primary outcome is mortality associated with SJS/TEN for each treatment group. Secondary outcomes include healing time assessed by surrogate measures (time to arrest of blistering progression, time to re-epithelialization, and length of hospital stay), disease-specific mortality, and sequelae. A total of 199 of 7587 screened studies met inclusion criteria. The most common causative agents were antibiotics (34%) and anticonvulsants (31%). The most common comorbid diseases were seizure-related disorders (31%) and infections (17%). There were 79 reported deaths (4.9%) demonstrating that mortality from SJS/TEN is low in children. Primary and secondary outcome measures stratified by treatment group are to be calculated to determine their effect on morbidity and mortality, if any, and results are to follow.

Category: Systematic review

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Overview

As an invited guest, you will be joining our Research Day Webinar as an Attendee. This means that you will not have video and voice capabilities. To fully optimize your experience of this event, it is recommended that you use the latest version of Zoom.

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- You will be allowed to ask questions during the live Q&A sessions via the Q&A chat feature. Your questions will be viewed by the Moderators and Hosts of the event only.
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- Oral Presentations – individual Q&A (1 minute/ presentation)
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    - Please specify who the question is for as this is a general Q&A.

Scoring the Presentations

- Your votes will only be viewed by the administrative staff and the technician.
- <u>Scoring the Oral Presentations (via Zoom Poll)</u>
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Scoring Criteria*

- ❖ Clarity and Justification of the Research Question/Hypothesis
- ❖ Appropriateness of the Methods Used to Answer the Question/Hypothesis
- ❖ Validity and Relevance of the Results to the Question/Hypothesis
- ❖ Quality of the Discussion and Conclusion
- ❖ Innovation Impact
- ❖ Visual Layout and Visual Impact of the Slides
- ❖ Oral Responses to the audience Questions (Oral Presentation)

**Adapted from University of Alberta's Department of Medicine's Research Day*

Audience Participation Guide

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- Research Day Evaluation Survey (Qualtrics)

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