

11.00 AM

REVIEW OF THE COMPOUND LIGHT MICROSCOPE: FEATURES, CALIBRATION, AND MAINTENANCE FOR THE MOHS MICROGRAPHIC SURGEON

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Mohs surgery is a specialized procedure that allows precise removal of skin cancers, including basal and squamous cell carcinoma. The microscope is an essential tool for Mohs surgeons who need to interpret histologic sections with accuracy. There is a paucity of literature regarding required Mohs microscope features, set-up, and maintenance. The current review addresses this knowledge gap, to improve patient care and medical resource utilization. The key recommended feature for the microscope used in a Mohs setting include planachromat objectives, which are corrected for blue and red chromic aberration, as well as flattened to produce a focused image throughout the entire field of view. Regarding the daily calibration of the microscope, eyepieces should first be adjusted for interpupillary distance and visual acuity. Then, Köhler illumination should be set up to achieve even and consistent illumination across the field of view. For occasional cleaning of eyepieces and objectives, soft, lint-free, and non-abrasive glasses wipes (like Kimwipes®) are recommended and should be used by wiping in a one direction circular motion. Foaming glass cleaner can also be used in combination if needed. Finally, a professional maintenance and calibration of the microscope is recommended at least once a year to ensure continued high quality of slide assessment, and to ensure longevity of the microscope.

Category: (3)

11.10 AM

EXTRACELLULAR GRANZYME B AS A NOVEL THERAPEUTIC TARGET IN CUTANEOUS LEISHMANIASIS

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Cutaneous leishmaniasis (CL) is a World Health Organization top neglected tropical disease. The inflammatory reaction elicited by parasite commonly results in a variety of chronic cutaneous lesions that leave severe scarring and disfigurement. Currently, limited treatment options are available with inadequate efficacy or serious side effects. Further elucidation of contributors to tissue damage and scarring seen in CL will pave the way for development of targeted treatment. Granzyme B (GzmB) is a serine protease that has been found to be elevated in CL. First identified in cytotoxic lymphocytes and classically known for its role in cytotoxic lymphocyte-mediated cell death, GzmB is also secreted by other immune and non-immune cells. Extracellular GzmB leaked from immune synapses or released from different cell types has been implicated in inflammatory skin conditions and delayed wound healing. Here, we investigated the cellular sources of GzmB and severity of the degradation of its known substrates in skin biopsies from patients with confirmed *Leishmania major* infection. Utilizing histological methods, we identified mast cells to comprise greater than 90% of GzmB-expressing cells in CL, and levels of established GzmB substrates, such as E cadherin, collagen VII, and collagen XVII, were reduced in areas with increased number of GzmB+ cells. Furthermore, an in vitro cell-free cleavage assay revealed that Desmoglein-4 and Annexin A2 are two novel substrates for GzmB that might be involved in pathogenesis of CL. In vivo studies are underway to determine the role of extracellular GzmB in tissue damage and scarring in CL.

Category: Early experiments with well-defined objectives/hypotheses

11.20 AM

DOES TOPICAL ANESTHESIA ALTER THE OUTCOMES OF VASCULAR LASER PROCEDURES? REVIEW OF VASODYNAMIC EFFECTS AND CLINICAL OUTCOMES DATA

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Background: Topical anesthesia has been shown to have vasodynamic effects within the skin. There is some concern that these effects may obscure the target hemoglobin chromophore thereby negatively affecting the efficacy of intense pulsed light and vascular laser treatments. It is unclear whether this theory holds any weight for real clinical outcomes. Currently there is no global consensus on whether topical anesthetics should be used to reduce pain and improve the patient experience in this context.

Objectives: Review the vasodynamic effects of topical anesthetics on the skin microvasculature and any associated clinical implications of such effects on vascular treatments.

Methods: PubMed and Medline searches were performed to identify studies examining the vasodynamic effects of topical anesthesia on skin, as well as those evaluating differences in efficacy of intense pulsed light and vascular laser treatments with or without topical anesthetic use.

Results: Published studies reveal that different commercially available topical anesthetics can have variable vasodynamic effects on the skin microvasculature. Only three controlled studies that directly examined the effect of topical anesthetics on clinical outcomes for pulsed dye laser treatment of vascular conditions were identified. No studies examining their use for intense pulsed light or other vascular lasers were found. They did not support a difference in clinical outcomes with or without the use of topical anesthesia prior to pulsed dye laser treatment.

Conclusion: While topical anesthetic agents have vasodynamic effects within the skin, there is currently insufficient evidence to advise against their use prior to light and laser-based vascular treatments.

Category: Applied/functional experiments

11.30 AM

TREATMENT OUTCOMES OF IGA VASCULITIS IN ADULTS: A SYSTEMATIC REVIEW

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Immunoglobulin A (IgA) vasculitis is characterized by IgA deposits in small vessels. IgA vasculitis is most commonly seen in children but is also reported in adults. Management options include observation only, corticosteroids, and immunomodulators, such as azathioprine, cyclophosphamide, and mycophenolates. We conducted a systematic review according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to characterize treatment outcomes for cutaneous manifestations of adult IgA vasculitis. 19 articles were included, representing 1160 patients (mean age: 51 years; sex: 59% men, n=611/1021). Systemic corticosteroids were the most frequently reported treatment (57%, n=609/1073), and 68% of these cases achieved complete response (n=179/262), while 24% (n=63/262) achieved partial response. Immunomodulators were used in 19% of cases (n=203/1073), with 60% (n=61/101) complete response and 35% (n=35/101) partial response. Sixteen percent of cases received no therapy (n=164/1073), with 93% complete response (n=50/54). In summary, the most frequently reported treatment modalities in adults with cutaneous manifestations of IgA vasculitis were systemic corticosteroids and immunomodulatory drugs, which had comparable treatment response. Patients who received no treatment had the highest complete response rate, though this may be related to decreased baseline severity of disease. Increased reporting will clarify treatment response.

Category: Early experiments with well-defined objectives/hypotheses

11.40 AM

TREATMENT OF OCULAR ROSACEA: A SYSTEMATIC REVIEW.

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Introduction: Rosacea is a common chronic skin disease distributed primarily around the central face. Ocular manifestations of rosacea are poorly studied, and estimates of prevalence vary widely, ranging from 6 to 72% in the rosacea population. Treatment methods for ocular rosacea include lid hygiene, topical and oral antibiotics, cyclosporine ophthalmic emulsion, oral vitamin A derivatives, and intense pulsed light (IPL); however, a direct comparison of treatment methods for ocular rosacea is lacking.

Objective: To compare treatment efficacy and adverse events for different treatment modalities in ocular rosacea.

Methods: We performed a systematic review by searching Cochrane, MEDLINE and Embase. Title, abstract, full text screening and data extraction were done in duplicate.

Results: Sixty-six articles met the inclusion criteria, representing a total of 1269 patients. The most effective treatment modalities were topical antimicrobials and oral antibiotics, which achieved complete or partial response in 91% (n=82/90) and 89% (n=525/580) of patients respectively, followed by IPL (88%, n=87/99), cyclosporine ophthalmic emulsion (87% n=40/46), combination treatments (86%, n=105/122), and lid hygiene (65%, n=67/105).

Conclusions: Results suggest that topical antimicrobials, oral antibiotics, IPL and cyclosporine were the most efficacious single modality treatments.

Category: Early experiments with well-defined objectives/hypotheses

11.50 AM

CUTTING IT CLOSE: 5-YEAR RETROSPECTIVE CHART REVIEW OF MELANOMA GUIDELINE ADHERENCE IN NORTHERN BRITISH COLUMBIA

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Introduction:

Northern British Columbia has generally had limited access to specialist dermatology care. To our knowledge, no studies have assessed whether this impacts melanoma clinical management and disease outcomes. We aimed to quantify the guideline adherence rate in British Columbia's Northern Health Authority for biopsies to rule-out melanoma, as well as wide local excisions of pathology-confirmed melanoma.

Methods:

We performed a population-based retrospective review of melanoma-related histopathology reports between 2016-2020, inclusive. Biopsies of suspected primary cutaneous melanoma and wide local excisions for confirmed melanoma were included. Guideline adherence was defined as performing an initial complete excision biopsy followed by a re-excision achieving minimum clinical margins according to the biopsy's Breslow thickness.

Results:

Of 1034 specimens identified, 621 biopsies and 265 re-excisions were evaluated. Guideline adherence rates were 44.2% for initial biopsies and 53.6% for wide local excisions. Elliptical biopsies were 10 times more likely to follow recommendations than punch biopsies (95% CI 5.36-18.7; $p < .001$). Excluding those in cosmetically sensitive areas, 30.9% of biopsies were incisional (i.e., positive clinical margins). Since all melanoma biopsies should prompt a wide local excision, there were 27.1% less re-excisions than expected.

Conclusions:

On average, less than half of excisions for suspected or confirmed melanoma followed guidelines. Multiple potential shortcomings were identified in the quality of melanoma clinical management. The disproportionate number of biopsy specimens suggests that not all confirmed melanomas were followed up with wide local excisions. A melanoma database

and standardized report templates are needed to fully evaluate current practices in northern British Columbia.

Category: Early experiments with well-defined objectives/hypotheses

12.00 PM

MULTIMODALITY VOLUMETRIC OPTICAL BIOPSY OF SKIN CANCER

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A biopsy followed by a histology examination has been the gold standard for skin cancer diagnosis, but it has also limitations which include the invasiveness of the procedure, partial sampling volume, the long waiting time to get the results, and post-operative complications like wound infection and bleeding. Various optical biopsy methods have been developed as non-invasive supplementary ways for skin cancer detection. Our group has been devoted to building a multimodality skin imaging system for non-invasive skin cancer diagnosis that provides comprehensive tissue information by combining reflectance confocal microscopy, two-photon fluorescence microscopy, and second-harmonic generation microscopy. Recently, we enabled our system to do volumetric imaging with fast speed, large field of view, and high resolution. With the xz-y volumetric imaging method, It takes 6 minutes to do a single volumetric stripe imaging of skin with cellular resolution and a dimension of 10 mm x 0.8 mm x 0.2 mm. Multiple volumetric stripes can be acquired and stitched together to cover a larger surface area. The method is also motion tolerant and has been used for both *ex vivo* and *in vivo* skin cancer imaging. To further increase the imaging speed, we also developed a tilted-plane volumetric imaging method which takes only 0.8 minutes to acquire a volume of 10 mm x 0.8 mm x 0.08 mm or 8 minutes to cover an area of 10 mm x 8 mm. This method may provide an alternative to confirm the clearance of cancer cells during surgical excisions.

Category: Early experiments with well-defined objectives/hypotheses