

Contents

Preface: Cutaneous Oncology: Where We Are and Where We Are Going xiii

Stanislav N. Tolkachjov

Squamous Cell Carcinoma: An Update in Staging, Management, and Postoperative Surveillance Strategies 1

Anthony K. Guzman, Chrysalyn D. Schmults, and Emily S. Ruiz

The rising incidence of cutaneous squamous cell carcinoma (cSCC) represents a public health crisis. Although most cases of cSCC are cured with surgical excision alone, high-risk disease requires a coordinated strategy involving accurate staging, possible multimodal therapy, and clinical and radiologic surveillance. In the following review, we present an evidence-based update on the current paradigm of diagnosis and management of cSCC and discuss the most relevant areas of active research related to prognostic staging as well as the appropriate use of radiologic imaging and adjuvant therapy.

Basal Cell Carcinoma 13

Michael S. Heath and Anna Bar

Basal cell carcinoma (BCC) is the most common cancer worldwide. Early identification can be made clinically, aided by dermoscopy, in addition to newer imaging technologies such as reflectance confocal microscopy. BCC most commonly demonstrates an indolent course responsive to local destruction or surgical removal. Mohs micrographic surgery is the most effective treatment, especially for high-risk tumors. Low-risk tumors may be amendable to nonsurgical treatment including topical and destructive therapies. Radiation therapy can be used in patients not amendable to surgery. Advanced and metastatic BCC can be treated with Hedgehog pathway inhibitors and other systemic agents with varying responses.

Targeted Therapy and Immunotherapy in Nonmelanoma Skin Cancer 23

Nader Aboul-Fettouh, Shelby L. Kubicki, Leon Chen, Sirunya Silapunt, and Michael R. Migden

Advanced nonmelanoma skin cancers (NMSC) are tumors not amenable to surgery and/or radiation. Early systemic treatment attempts with cytotoxic chemotherapy demonstrated low response rates, short durations of response, and high toxicity. Over the last decade, modern therapies for advanced NMSC include targeted therapies and immunotherapies. Hedgehog pathway inhibitors and programmed death-1 inhibitors are available first-line therapies for the treatment of advanced basal cell carcinomas and squamous cell carcinomas, respectively.

Mohs Micrographic Surgery 39

Nicholas Golda and George Hruza

Mohs micrographic surgery (MMS) is widely accepted as the gold standard for skin cancer cure, and properly trained surgeons who carry out this procedure are experts in the science and management of skin cancer. There are many potential pitfalls and challenges that a surgeon may encounter while carrying out MMS, and these can increase the likelihood of tumor recurrence and increased patient morbidity. With precise surgical technique, careful tissue handling, and laboratory processes that safeguard against errors, this procedure can provide excellent cure rates for most skin cancers, including melanoma, while maximizing tissue conservation in a low-cost outpatient clinical setting.

Melanoma classification and management in the era of molecular medicine **49**

Sarem Rashid, Michael Shaughnessy, and Hensin Tsao

Melanoma is the most lethal form of skin cancer although surgery is often curative when combined with early screening and prevention. In recurrent or advanced cancer, the emergence of chemotherapy, targeted therapy, and immune checkpoint inhibitors has demonstrated promising clinical outcomes. Such approaches can remarkably halt the progression of disease for many years, although are limited by the acquisition of resistance. The development and approval of combination therapies has further changed the treatment paradigm for certain melanomas. This review focuses on the current state of melanoma epidemiology and recent advancements in melanoma screening, histopathological classification, staged excision (i.e. wide local excision, sentinel lymph node biopsy, and Mohs micrographic surgery), and systemic treatment.

Targeted Therapy and Immunotherapy in Melanoma **65**

Jake Lazaroff and Diana Bolotin

While metastatic melanoma still carries significant mortality rates, the introduction of targeted therapy with BRAF/MEK inhibition and immunotherapy with PD-1, PD-L1, and CTLA-4 inhibitors has led to significant strides in outcomes and prognosis.

Mohs Micrographic Surgery for Melanoma: Evidence, Controversy, and a Critical Review of Excisional Margin Guidelines **79**

David G. Brodland

Evidence supports the safety of Mohs micrographic surgery for melanoma. Because of its potential benefits to the patient in terms of very low-recurrence rates and same-day histologic confirmation of tumor removal with reconstruction of tumor-free margins of potentially smaller wounds, it should be one of the treatment options considered. The informed consent process for the patient should not be complete without a discussion of the attributes of Mohs surgery for melanoma.

Gene Expression Profiles in Cutaneous Oncology **89**

Bo M. Kitrell, Elliot D. Blue, Alfredo Siller Jr., Marissa B. Lobl, Tyler D. Evans, Melodi Javid Whitley, and Ashley Wysong

Skin cancer is highly curable under most circumstances; however, locally advanced or metastatic disease historically has poor outcomes and limited treatment options. Treatment has recently been advanced by the discovery of pertinent genes influencing pathogenesis and further revolutionized by the advent of specific gene expression profiles (GEPs). GEPs have been developed to help refine current diagnostic and prognostic strategies used in skin cancer with the goal to ultimately help guide management and treatment modalities to improve patient care. This article provides a high-level review of diagnostic and prognostic GEPs that have been developed specifically for squamous cell carcinoma and melanoma.

Merkel Cell Carcinoma **101**

Daniel J. Lewis, Joseph F. Sobanko, Jeremy R. Etzkorn, Thuzar M. Shin, Cerrone N. Giordano, Stacy L. McMurray, Joanna L. Walker, Junqian Zhang, Christopher J. Miller, and H. William Higgins II

Merkel cell carcinoma (MCC) is a neuroendocrine carcinoma that typically presents as a rapidly enlarging violaceous papulonodule on sun-damaged skin in elderly patients. MCC has high rates of local recurrence, metastasis, and poor survival. Treatment of the primary tumor involves surgical excision with possible adjuvant radiation therapy, whereas regional nodal disease is treated with some combination of lymph

node dissection and radiation therapy. Immune checkpoint inhibitors, such as avelumab and pembrolizumab, are first-line agents for metastatic MCC. Monitoring for recurrence can be aided by Merkel cell polyomavirus oncoprotein antibody titers.

Adnexal and Sebaceous Carcinomas

117

Edward W. Seger, Brett C. Neill, and Stanislav N. Tolkachjov

Adnexal carcinomas and sebaceous neoplasms are rare malignant neoplasms that are derived from eccrine and apocrine sweat glands or the pilosebaceous unit. Distinction of these neoplasms is essential, as treatment, workup, and prognosis varies widely among subtypes. For this comprehensive review, apocrine, eccrine, follicular, and sebaceous neoplasms are discussed. For each neoplasm, a review of clinical presentation, classic histologic findings, and management recommendations is provided.

Cutaneous Mesenchymal Sarcomas

133

Frances Walocko, Rachel E. Christensen, Brandon Worley, and Murad Alam

Cutaneous mesenchymal sarcomas are rare malignancies that include dermatofibrosarcoma protuberans, atypical fibroxanthoma, pleomorphic dermal sarcoma, cutaneous angiosarcoma, myofibrosarcoma, and leiomyosarcoma. These tumors lack consensus guidelines on staging and management. Treatment of local disease involves complete surgical removal but recurrence rates are higher compared with more common forms of nonmelanoma skin cancer. Cutaneous angiosarcoma, pleomorphic dermal sarcoma, and subcutaneous leiomyosarcoma have increased risk of metastatic spread and lower survival rate. Further research is needed on targeted therapies for these more aggressive sarcomas.

Cutaneous Oncology in the Immunosuppressed

141

Leo L. Wang, Stephanie K. Lin, Carolyn M. Stull, Thuzar M. Shin, H. William Higgins II, Cerrene N. Giordano, Stacy L. McMurray, Jeremy R. Etzkorn, Christopher J. Miller, and Joanna L. Walker

Patients with immunosuppressive conditions experience an increased frequency and severity of cutaneous malignancies. This article highlights management of keratinocyte carcinoma, melanoma, Merkel cell carcinoma, and Kaposi sarcoma in the setting of lymphoproliferative disorders, acquired immunodeficiencies, and organ transplantation. Advances in the safety of organ transplant recipient immunosuppression, early identification of risk factors, and new targeted therapies are improving skin cancer outcomes in immunocompromised populations.

Approaches to Tumors of the Nail Unit and Genitalia

163

Kishan M. Shah, Kevin Y. Shi, Rajiv I. Nijhawan, and Divya Srivastava

The nail unit and genitalia represent rare locations where malignant tumors may arise. Human papillomavirus has emerged as a causative agent of the development of the most common malignancies in these sites. Tissue preservation with surgery is of utmost importance, and tissue-sparing approaches are increasingly emphasized in the dermatology, urology, and gynecology literature. In addition to its tissue-sparing nature, Mohs micrographic surgery allows the complete evaluation of histologic margins to ensure tumor extirpation and may be the ideal treatment modality. The authors herein present approaches for the evaluation and treatment of malignant tumors of the nail unit and genitalia.

Pediatric Cutaneous Oncology: Genodermatoses and Cancer Syndromes 175

Jackson G. Turbeville and Jennifer L. Hand

Skin cancers represent the most common malignancy worldwide. In children, the diagnosis of skin cancer is rare and raises the possibility of an underlying genetic predisposition. Recent molecular advances have increased understanding of certain genetically determined regulatory pathways that constantly protect the skin from atypical cell growth and cancer. Knowledge about these underlying gene defects aids a dermatologist's ability to recommend confirmatory genetic testing and provides potential targets for future therapies. In this review, we outline genetic conditions important to dermatologists that are associated with skin cancer development and review the current approaches to the management of these patients.

A Practical Review of the Presentation, Diagnosis, and Management of Cutaneous B-Cell Lymphomas 187

Nikhil Goyal, Daniel O'Leary, Joi B. Carter, Nneka Comfere, Olayemi Sokumbi, and Amrita O'Leary Goyal

This review of cutaneous B-cell lymphoma (CBCL) is focused on the clinical presentation, treatment, and workup of each type of lymphoma. Part 1 is an overview of each of the CBCLs, including clinical presentation, recent advances in the pathobiology, and evidence regarding treatment strategies. Part 2 is a detailed guide to the steps in diagnosis and workup of a newly diagnosed CBCL according to the International Society for Cutaneous Lymphoma/European Organization for Research and Treatment of Cancer and NCCN guidelines.

A Practical Guide to the Diagnosis, Evaluation, and Treatment of Cutaneous T-Cell Lymphoma 209

Serena Shimshak, Olayemi Sokumbi, Nasro Isaq, Amrita O'Leary Goyal, and Nneka Comfere

Cutaneous T-cell lymphomas are a clinically and histopathologically heterogeneous group of disorders, encountered in dermatologic practice. In this article, we provide a detailed practical guide to the evaluation, diagnosis, and management of common cutaneous T-cell lymphomas. Emphasis is placed on the clinical evaluation including the role of the dermatologist in the accurate assessment of body surface area involvement for disease staging, appropriate biopsy techniques, and key considerations, recent advances in the molecular genetic characteristics of disease, and common treatment approaches.

Preventative Options and the Future of Chemoprevention for Cutaneous Tumors 231

Jane Margaret Anderson, Lauren Moy, and Ronald L. Moy

Chemoprophylaxis against nonmelanoma skin cancer (NMSC) should be considered in high-risk populations such as those with certain genetic disorders, immunosuppressive states, chronic radiation, excessive UV exposure, or extensive personal or family history of NMSC. The methods for chemoprevention have progressed beyond traditional sunscreen into more effective strategies including DNA repair enzymes, nicotinamide, systemic retinoids, and nonsteroidal anti-inflammatory drugs. Other therapies are still being investigated and include treatments that target premalignant lesions, capecitabine, hedgehog inhibitors, difluoromethylornithine, metformin, and nutritional factors.