



Molecular Pathology of Skin Adnexal Tumors

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ARTICLE HISTORY

Received: June 8, 2021

Accepted: June 22, 2021

Published: June 29, 2021

Introduction

Tumors of the cutaneous adnexa arise from, or differentiate toward, structures in normal skin such as hair follicles, sweat ducts/glands, sebaceous glands, or a

the disease and results in a specific diagnostic interpretation.

Common non melanoma skin cancers, such as basal and squamous cell carcinomas, show a UV-induced pathogenesis. Basal cell carcinomas are characterized by molecular alterations of the Hedgehog pathway, affecting patched and smoothened genes. Certain melanoma subtypes, such as lentigo maligna melanoma and desmoplastic melanoma, which are more often seen on the chronically sun-damaged skin of the head and neck, combination of these elements. This class of neoplasms includes benign tumors and highly aggressive carcinomas. Adnexal tumors often present as solitary sporadic lesions, but can herald the presence of an inherited tumor syndrome such as Muir-Torre Syndrome, Cowden Syndrome, or CYLD Cutaneous Syndrome. In contrast to squamous cell carcinoma and basal cell carcinoma, molecular changes in adnexal neoplasia have been poorly characterized, and there are few published reviews on the current state of knowledge.

Molecular pathology is an emerging discipline within pathology which is focused in the study and diagnosis of disease through the examination of

molecules within organs, tissues or bodily fluids. Molecular pathology shares some aspects of practice with both anatomic pathology and clinical pathology, molecular biology, biochemistry, proteomics and genetics, and is sometimes considered a "crossover" discipline. It is multi-disciplinary in nature and focuses mainly on the sub-microscopic aspects of disease. Dermatopathology is a joint subspecialty of dermatology and pathology or surgical pathology that focuses on the study of cutaneous diseases at a

microscopic and molecular level. It also encompasses analyses of the potential causes of skin diseases at a basic level. Dermatologists are able to recognize most skin diseases based on their appearances, anatomic distributions, and behavior. Sometimes, however, those criteria do not allow a conclusive diagnosis to be made, and a skin biopsy is taken to be examined under the microscope or are subject to other molecular tests. That process reveals the histology of show differences in their molecular signature when compared to the other more common subtypes, such as superficial spreading melanoma, which are more prone to occur at sites with acute intermittent sun damage. In summary, molecular alterations in cutaneous neoplasms of the head and neck are often related to UV exposure. Their molecular footprint often reflects the histologic tumor type, and familiarity with these changes will be increasingly necessary for diagnostic and therapeutic considerations.