e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(12); 1658-1661

Original Research Article

To Study the Clinical Practice of Immunohistochemistry in Dermatopathology at Tertiary Care Centre

Sanjeev Kumar[1], Arshiya Kaura[2], Samruddhi Mudgal[3], Vivek Singh[4]

[1]Senior Resident, Dept. of DVL & Pathology, Maharishi Markandeshwar College of Medical Sciences and Research, Ambala

[2] Senior Resident, Dept. of DVL & Pathology, Maharishi Markandeshwar College of Medical Sciences and Research, Ambala

[3]Assistant Professor, Dept. of DVL & Pathology, Maharishi Markandeshwar College of Medical Sciences and Research, Ambala

[4]Senior Resident, Dept. of DVL & Pathology, Maharishi Markandeshwar College of Medical Sciences and Research, Ambala

Received: 25-11-2023 / Revised: 13-12-2023 / Accepted: 30-12-2023
Corresponding Author: Dr. Vivek Singh
Conflict of interest: Nil

Abstract:

Background & Methods: The aim of the study is to study the Clinical Practice of Immunohistochemistry in Dermatopathology at Tertiary Care Centre. This is mainly related to the fact that it is a relatively simple, fast, and inexpensive method. In this review, the authors highlight the main immunohistochemical techniques that have been used and continue to evolve in the diagnosis of mucocutaneous viral and bacterial infections, and discuss their applicability.

Results: IHC is usually not required for diagnosis of benign melanocytic nevi. The finding of pigmented nevus cells in different stages of maturation is usually diagnostic. However, some cases predominantly show spindle cell morphology, and they need to be differentiated from other benign spindle cell neoplasms. Immunohistochemical expression of melanocytic markers helps to make an accurate diagnosis. Some cases of nevoid melanomas need to be differentiated from nevi, like spitz nevus, which shows transepidermal migration and pagetoid spread.

Conclusion: We examine the most useful and specific in the study of skin infections and of epithelial, muscular, lymphatic and hematologic, neural, neuroendocrine, and melanocytic neoplasms that affect the skin. Finally, we include a brief review of the immunohistochemical profile of skin metastases of malignant visceral tumors.

Keywords: Clinical, Immunohistochemistry & Dermatopathology.

Study Design: Observational Study.

Introduction

Immunohistochemistry (IHC) is an indispensable tool for the surgical pathologist that is constantly evolving and expanding. It has wide applications in everyday practice, such as determination of the nature, lineage, or differentiation of normal cells or tumors; distinguishing between benign and malignant neoplasms; assessment of the likely primary site for tumors of uncertain origin; and demonstration of the existence of microorganisms. [1] With the availability of highly effective antigen retrieval techniques, highly sensitive immunohistochemical detection systems, and a wide spectrum of new antibodies and with better understanding of the molecular alterations in tumors, IHC is also playing an increasingly important role for dermatopathologists. [2] New immunohistochemical targets are continually being found, contributing to more accurate diagnosis and classification of cutaneous disorders. [3]

In selected conditions, IHC can likewise supplement or even supplant sub-atomic examination, by filling in as a screening device to emergency tests for the last examination. Contrasted and sub-atomic examinations, immunohistochemical studies are more affordable and less work escalated, can be acted in routine demonstrative labs, and can typically be finished in a lot more limited time. Consequently, the utilization of broad immunohistochemical stains as of late has given the pathologist overall and the dermatopathologist explicitly numerous new weapons in their symptomatic armamentarium. [4]

Immunofluorescence strategies depend on the utilization of fluorescein-named markers, which, when presented to bright light, discharge apparent light of differing frequencies relying upon the idea of the compound utilized. Direct immunofluorescence is utilized generally in the conclusion of skin sicknesses, a field in which it has unmistakable signs. Specifically it is utilized to analyze bullous illnesses, vasculitis, and particular kinds of tumors. [5] Despite the fact that it is more delicate than immunostaining, immunofluorescence has specific drawbacks, including loss of fluorescence after some time, the requirement for a particular light magnifying lens, and unfortunate perception of morphologic elements. Moreover, the subsequent responses should be captured each time for documentation purposes. [6]

Material and Methods

Present study was conducted at Tertiary Care Centre on 100 patients for 01 Year. IHC continues to be one of the main adjunctive methods to conventionally stained sections in histopathology. This is mainly related to the fact that it is a relatively simple, fast, and inexpensive method. In this review, the authors highlight the main immunohistochemical techniques that have been used and continue to evolve in the diagnosis of mucocutaneous viral and bacterial infections, and discuss their applicability.

Inclusion Criteria:

1. Well preserved, well stained FFPE slides of skin biopsies

2. Age of the patients: 01-100 years

3. Cases on which IHC was performed and a clear cut diagnosis was rendered

Exclusion Criteria:

1. Poorly stained or broken slides

2. Inflammatory pathology, ambiguous diagnosis

3. Other ancillary techniques such as immunofluorescence etc was excluded

Result

Table 1: Immunohistochemical differential diagnosis

Parameter	Bcl2	Bcl6	CD10	CD5	CyclinD1	CD23
Primary cutaneous follicular center lymphoma	-	+	+	-	-	+
Nodal follicular lymphoma	+	+	+	-	-	-
Primary cutaneous marginal zone lymphoma	+	-	-	+	-	-
Mantle cell lymphoma	+	-	-	-	+	-
B cell chronic lymphocytic leukemia	+	-	-	-	-	+

Table 2: Panel of immunohistochemistry used for intraepidermal neoplasms

Parameter	Bcl2	Bcl6	CD10	CD5
HMB45	+	-	-	-
Melan A	+	-	-	-
P63	-	+	-	+
Androgen receptor	-	-	-	+
Ber-EP4	-	-	+	+

Table 3: Immunohistochemistry panel for spindle cell tumors of skin

Parameter	S-100	Sox-10 SMA CD34 Factor	SMA	CD34	Factor XIII	Melan A
Leiomyoma	-	-	+	-	-	-
Dermatofibroma	-	-	-	-	+	-
Dermatofibrosarcoma protuberans	-	-	-	+	-	-
Neurofibroma	+	-	-	-	-	-
Spindle cell lipoma	-	-	-	+	-	-
Desmoplastic melanoma	+	+	-	-	-	-

Discussion

IHC plays restricted part in the determination of contaminations of skin. Viral diseases are normal, yet most are self-limiting. Human papilloma infection (HPV) normally influences skin and causes verruca vulgaris, condyloma accuminata, and other pre-neoplastic conditions like Bowenoid papulosis. Among these, Bowenoid papulosis is brought about by high-risk HPV though others are related with low-risk HPV infection. [7] These injuries can show significant histological cross-over. There is right now no neutralizer accessible to distinguish high-risk HPV disease. In any case, p16 goes about as a proxy marker of high-risk HPV contamination. p16 and Ki-67 multiplication records assume significant part in the administration of lower anogenital squamous sores. Diffuse p16 inspiration and higher expansion files demonstrate HPV incited pre-neoplastic condition over receptive changes. [8] Human herpes infection (HHV) 8 is another infection, which is liable for KS. In spite of the fact that KS has trademark morphological elements, atomic staining for HHV-8 affirms the determination in testing cases. Cutaneous cytomegalovirus (CMV) disease should be visible in the immunocompromized patients. Clinically, cutaneous CMV disease looks like numerous different circumstances and the analysis is testing. IHC assumes a valuable part to recognize the viral considerations. Antibodies coordinated against different CMV antigens show great sensitivity. [9]

The beginning stage of this IHC examine is to create reproducible staining results/staining designs (cells, vessels, or both) from the refined TFRC KI mouse cerebrum tissue. Pictures of counter acting agent stained tissue slides were caught under a similar openness time (7s~12s) and amplification (100x). A sum of four districts of the single cerebrum tissue segment CB, CTX, HIPP, MB - were broke down as essential boundaries for staining design evaluation. [10] A numeric score metric was created to score each stained slide, which doled out a numeric score to the staining designs, making the IHC results quantitative. The immunohistochemical staining results were additionally contrasted and in vivo cerebrum take-up results to decide if the mind IHC could anticipate in vivo transcytosis. [11] The review results, notwithstanding, showed varieties between the two rounds of in vitro IHC measure and absence of connection with the in vivo transcytosis examine.

The histopathologic distinction between primary adnexal carcinoma and cutaneous metastasis from a visceral adenocarcinoma is also a common problem. CK5/6, p63, and podoplanin have been pr posed as markers for such cases, as they are preferentially expressed in primary carcinomas but tend to be negative in metastases arising from visceral adenocarcinomas. Nonetheless, the discriminatory capacity of these markers is not absolute, as recent studies have shown p63 to be expressed with relative frequency in cuta- neous metastases from adenocarcinoma, which also exhibit focal podoplanin positivity in up to 5% of cases. GCDFP-15 (gross cystic disease fluid protein 15) has a sensitivity and specificity of 99% for metastases from breast adenocarcinoma, but is also positive in cutaneous eccrine and apocrine carcinomas. p53 antibody recognizes the N-terminal epitope of protein p53, which is encoded by the suppressor gene *p53* on chromosome 17. Its immunohistochemical detection is associated with mutations and it is used as a predictive marker in different types of cancer [12].

The retinoblastoma *RB1* gene encodes the synthesis of the nuclear phosphoprotein, pRb, which plays a critical role in cell cycle control by interacting with the transcription factor E2F. Loss of pRb expression has been reported to have prognostic value in certain neoplasms.

Conclusion

We examine the most useful and specific in the study of skin infections and of epithelial, muscular, lymphatic and hematologic, neural, neuroendocrine, and melanocytic neoplasms that affect the skin. Finally, we include a brief review of the immunohistochemical profile of skin metastases of malignant visceral tumors. Immunohistochemical staining with anti-CMV monoclonal antibody gives a nuclear staining pattern within the endothelial cells of the dermis in early-stage infections, and a nuclear and cytoplasmic pattern in late-stage infections.

References

1. Harrison OB, Robertson BD, Faust SN, et al. Analysis of pathogen-host cell interactions in purpura fulminans: expression of capsule, type IV pili, and PorA by Neisseria meningitidis in vivo. Infect Immun. 2002;70: 5193–5201.
2. Schaller J, Carlson JA. Erythema nodosum-like lesions in treated Whipple's disease: signs of immune reconstitution inflammatory syndrome. J Am Acad Dermatol. 2009; 60:277–28 8.
3. Canal L, Fuente Dde L, Rodriguez-Moreno J, et al. Specific cutaneous involvement in Whipple disease. Am J Dermatopathol. 2014; 36:34 4–346.
4. Baisden BL, Lepidi H, Raoult D, et al. Diagnosis of Whipple disease by immunohistochemical analysis: a sensitive and specific method for the detection of Tropheryma whipplei (the Whipple bacillus) in paraffinembed-

ded tissue. Am J Clin Pathol. 2002; 118:742–7 48.
5. Angelakis E, Fenollar F, Lepidi H, et al. Tropheryma whipplei in the skin of patients with classic Whipple's disease. J Infect. 2010; 61:266–269.
6. Tüzün Y, Keskin S, Kote E. The role of Helicobacter pylori infection in skin diseases: facts and controversies. Clin Dermatol. 2010; 28:47 8–482.
7. Missall TA, Pruden S, Nelson C, et al. Identification of Helicobacter pylori in skin biopsy of prurigo pigmentosa. Am J Dermatopathol. 2012; 34:446–448.
8. Wabinga HR. Comparison of immunohistochemical and modified Giemsa stains for demonstration of Helicobacter pylori infection in an African population. Afr Health Sci. 2002; 2:52–55.
9. Shahamat M, Alavi M, Watts JE, et al. Development of two PCR-based techniques for detecting helical and coccoid forms of Helicobacter pylori. J Clin Microbiol. 2004; 42:3613–3619.
10. Cerny Z. Skin manifestations of tularemia. Int J Dermatol. 1994; 33:468–470.
11. Akdis AC, Kiliçturgay K, Helvaci S, et al. Immunological evaluation of erythema nodosum in tularaemia. Br J Dermatol. 1993; 129:275–279.
12. 12. Requena L, Prieto VG, Requena C, Sarasa JL, Manzano R, Seco M, et al. Primary signet-ring cell/histiocytoid carcinoma of the eyelid: a clinicopathologic study of 5 cases and review of the literature. Am J Surg Pathol. 2011;35: 378-91.