



COMPARING THE EFFICACY OF HAEMATOXYLIN AND EOSIN (H AND E) AND PERIODIC ACID SCHIFF (PAS) FOR DEMONSTRATION OF BASEMENT MEMBRANE IN LICHEN PLANUS

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Abstract:

Back Ground: Basement membrane (BM) is an electromicroscopically, amorphous, thick sheet of extracellular matrix molecules, upon which epithelial cells attach ⁽¹⁾. Oral lichen planus (OLP) is an inflammatory autoimmune, mucocutaneous disease, the etiology of which is unknown. This basement membrane can be visualised in microscopes after histopathologicalstaining. Hence there comes a need to assess which stain is better in demonstrating the basement membrane microscopically.

Aim: To demonstrate the efficacy of H&E and PA for demonstration of basement membrane in oral lichen planus.

Materials and Methods: Four OLP tissue samples were collected, sectioned and 2 set of slides were prepared for each tissue sample. The first sets of slides were stained with H&E and the other set of slides were stained with PAS following the staining protocol. All the sets were finally observed under the light microscope and the changes were evaluated and the results were tabulated.

Results: PAS was a better stain in demonstrating the basement membrane of lichen planus compared to H and E.

Key Words: Oral lichen planus , basement membrane , H and E , PAS, Special stains

Introduction:

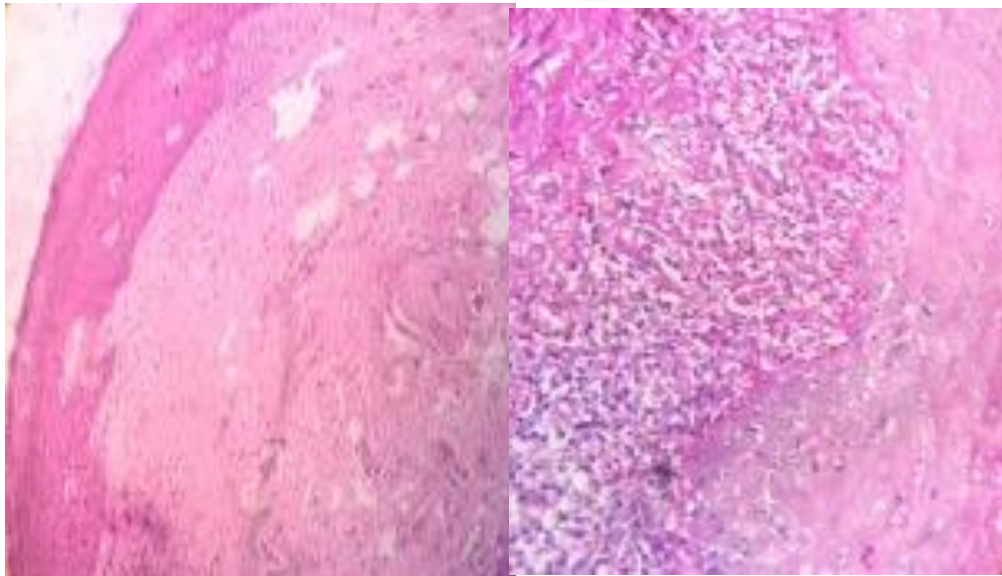
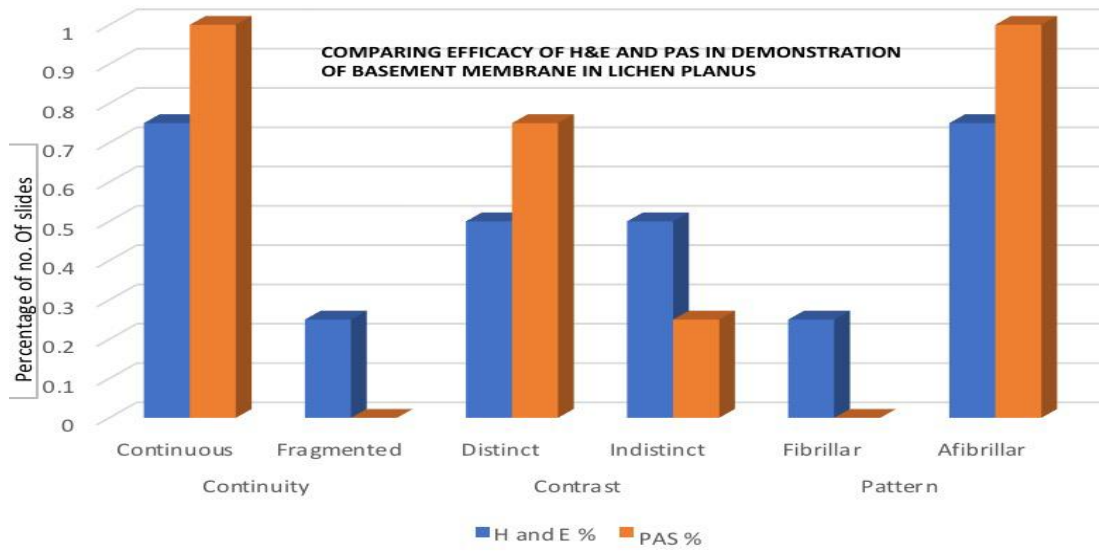
Oral lichen planus is a T cell mediated inflammatory condition affecting the mucous membrane of the oral cavity⁽²⁾. Vincent et al., 1990; Silverman et al., 1991 stated that the oral lichen planus lesions appear as white striations, white papules, white plaques, erythema, erosions, or blisters affecting predominantly the buccal mucosa, tongue, and gingivae .The histopathology of oral lichen planus has increased number of intra-epithelial lymphocytes , degeneration of keratinocytes and lympho-histiocytic infiltrates⁽³⁾. Diagnosis of lichen planus can be easily done with the presenting clinical features .The lesions are often found in association with the mucosa of cheek , gingiva , and lower lip^(5,6). However due to the wide variety of differences in its appearance and a silent onset it is often overlooked during the process of clinical examination⁽⁴⁾. Hence other complementary studies such as optical microscopy and Direct Immunofluorescence are being used to aid in the confirmatory diagnosis of lichen planus⁽⁷⁾. Yet again the sensitivity of DirectImunofluorescence depends upon the type of disease ⁽⁸⁾ and thus not yield 100% results all the time and is much costlier compared to optical microscopy. Whereas when it comes to optical microscopy, the effect of Histopathological diagnosis comes with proper staining abilities apart from the art of diagnosing the lesions. Hence for an efficient diagnosis proper stains and staining techniques are very essential and should also be cost effective. This study thus focuses on the comparison between H and E and PAS stain to demonstrate the basement membrane in lichen planus.

Materials and Methods:

Four OLP tissue samples were collected from the archives of Saveetha Dental College, sectioned and 2 set of slides were prepared for each tissue sample. Then the first set of smears were stained with H&E and the other set of smears were stained with PAS following the staining protocol. All the sets were finally observed under the light microscope and the changes were evaluated and the results were tabulated

		H and E %	PAS %
Continuity	Continuous	75%	100%
	Fragmented	25%	0%
Contrast	Distinct	50%	75%
	Indistinct	50%	25%
Pattern	Fibrillar	25%	0%
	Afibrillar	75%	100%

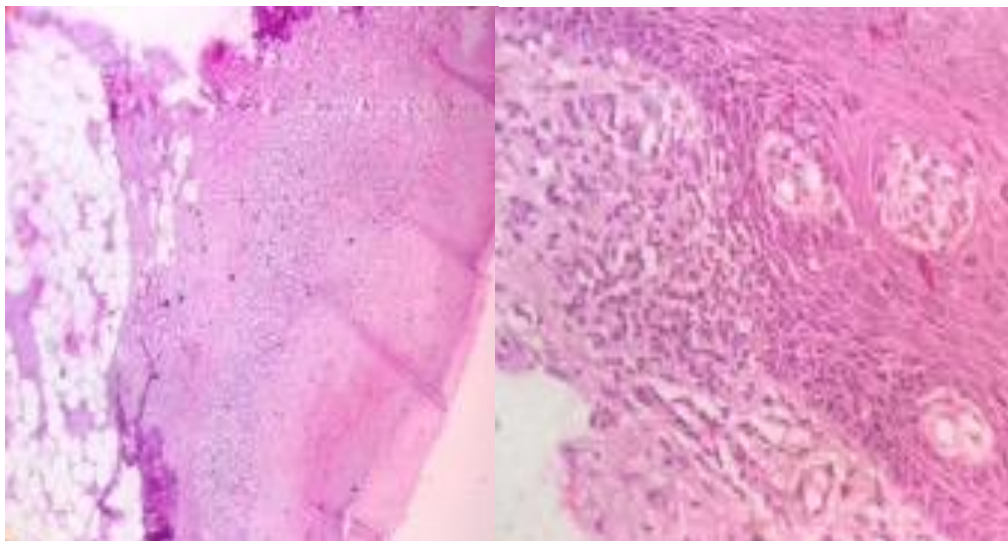
H&E:



LOW POWER (4x)

HIGH POWER (40X)

PAS:



LOW POWER (4x)

HIGH POWER (40X)

From the above results, it can be concluded that PAS is better than H&E in demonstrating the basement membrane continuity (fragmented), contrast (Indistinct), pattern (afibrillar). From the results obtained, the basement membrane of lichen planus appeared to be fragmented in 75% of the slides stained with H and E and appeared fragmented in all the slides stained with PAS. The basement membrane appeared indistinct in 50% and 75% of the slides stained with H and E and PAS respectively. The basement membrane appeared afibrillar in 75% and 100% of the slides stained with H and E and PAS respectively.

Discussion:

A basement membrane is a flat junction⁽⁹⁾ that acts like a selective membrane⁽¹⁰⁾ and helps in the protection of underlying tissues. In many diseases the functions and the morphology of the basement membrane changes according to the type of the disease. According to Eisenberg, the histopathological characteristics must be classic to give a definitive diagnosis of oral lichen planus which include liquefactive degeneration of the basal layer, band-like dense inflammatory infiltrate of T lymphocytes, normal epithelial maturation, saw-toothed anatomical prominences, Civatte bodies and hyperkeratosis⁽¹¹⁾. Wilson et al. in his study stated that basement membrane identification is very crucial in the diagnosis of various malignancies⁽¹²⁾. In a study conducted by Ashwini et al., she stated that a BM is seen as fine eosinophilic line beneath the epithelium when stained with H and E and as a fine magenta line when stained with PAS⁽¹⁾. When the lesions of lichen planus were viewed under electron microscope, the basement membrane appeared thickened and discontinuous^(13,14). The results of the present study reveals that the basement membrane of majority of the slides of lichen planus were fragmented, indistinct and afibrillar which coincides with the results obtained from various other studies with PAS demonstrating the basement membrane features more clearly than the features revealed by H and E.

Conclusion:

A basement membrane is spatially and temporally unique⁽¹⁵⁾. This feature of basement membrane enables a pathologist to view under the microscope the varying changes of basement membrane that accompanies different lesions. In this study the change in basement membrane in the lesions of lichen planus is used to distinguish two different stains in their ability to stain the basement membrane of lichen planus lesions. PAS stains better in distinguishing the changes found in BM of lichen planus compared to H and E.

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