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Conglomeration of infectious lesions of prostate and mucin - An original research

(Acumulo de lesiones infecciosas de próstata y mucina - Una investigación original)

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Abstract(english)

Microscopic differentiation of benign and low grade malignant lesions of prostate pose a challenging task for the pathologists. Immunohistochemistry markers can prove costlier in resource poor settings. To assess the utility of mucin stains in evaluating and differentiating benign and malignant lesions of prostate. 100 prostatic biopsies received in the Pathology department of a tertiary care hospital over a period of one and half years were included in this study. In addition to routine H&E, the sections were stained with Periodic acid Schiff (PAS), Alcian blue (AB) and Mucicarmine (MC) stains. Out of 100 prostatic biopsies studied, 90% of benign cases and 53% malignant lesions showed positivity with Periodic acid Schiff (PAS) stain. With Alcian blue, 67% of malignant lesions showed positivity and with Mucicarmine 60% of malignant lesions showed positivity. In contrast only 1% of benign lesions were positive with Alcian blue and Mucicarmine. Neutral mucin was found to be more frequently positive in benign lesions of prostate whereas acidic mucin is expressed only in malignant lesions.

Keywords(english)

Prostate, Periodic acid Schiff (PAS), Alcian blue (AB) and Mucicarmine (MC) stains.

Resumen(español)

La diferenciación microscópica de lesiones benignas y malignas de bajo grado en la próstata plantea un reto para los patólogos. Los marcadores inmunohistoquímicos pueden resultar más costosos en entornos con recursos limitados. Para evaluar la utilidad de las tinciones de mucina en la evaluación y diferenciación de lesiones benignas y malignas en la próstata, se incluyeron en este estudio 100 biopsias prostáticas recibidas en el departamento de Patología de un hospital de tercer nivel durante un período de un año y medio. Además de la hematoxilina y eosina (H&E) de rutina, las secciones se tiñeron con ácido peryódico de Schiff (PAS), azul alcián (AB) y mucicarmín (MC). De las 100 biopsias prostáticas estudiadas, el 90% de los casos benignos y el 53% de las lesiones malignas mostraron positividad con la tinción de ácido peryódico de Schiff (PAS). Con azul alcián, el 67% de las lesiones malignas mostraron

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positividad y con mucicarmín, el 60%. En contraste, solo el 1% de las lesiones benignas fueron positivas con azul alcián y mucicarmín. La mucina neutra fue más frecuentemente positiva en las lesiones benignas de próstata, mientras que la mucina ácida se expresa solo en las lesiones malignas.

Palabras clave(español)

Próstata, tinciones de ácido peryódico de Schiff (PAS), azul alcián (AB) y mucicarmín (MC).

Introduction

Incidence of prostatic carcinoma is more common in western setup and it is the second most leading cause of cancer related deaths in USA.1 Incidence is on the rise in India due to increase in urban population and modifications in life style.

In suspected cases of prostatic carcinoma, needle core biopsy is the common specimen received for confirmation. But because of limited amount of tissue, it sometimes becomes difficult to confirm carcinoma. Screening with PSA can be misleading, as the levels of it can be increased even in some benign conditions and after prostatic massage.

Microscopic differentiation of low grade adenocarcinoma and benign lesions can be a challenge for the reporting pathologists. Immunohistochemistry (IHC) can prove costly in resource poor settings. So, in these situations, there is a necessity for a cost effective way for distinguishing the cases of well differentiated malignancies from benign lesions.

There is a presence of neutral mucins in benign lesions of prostate and acidic mucins in low grade malignant lesions.2 So, in this study we tried to demonstrate those mucins using mucin stains and thus find a cost effective way of diagnosing and differentiating low grade malignancies from benign lesions. Here in this study we used Periodic acid Schiff (PAS) to demonstrate neutral mucins and Alcian blue and Mucicarmine to demonstrate acidic mucins.

Materials and methods

100 prostatic biopsies received in the department of pathology in a tertiary care hospital over a course of 18 months (November 2016 to May 2018) were studied. All the paraffin embedded sections were subjected to PAS, Alcian blue and Mucicarmine along with routine H&E sections. On H&E sections histological diagnosis, Gleason's scoring, grade grouping and categorization of malignant cases were done.

Results

Out of 100 cases studied, majority (75%) of the cases were of BPH including pure BPH and BPH associated with other lesions. 15 cases were diagnosed to be malignant, among which 9 (60%) cases were well differentiated, 2 (13.3%) were moderately differentiated and 4 (26.7%) were poorly differentiated. To detect neutral mucin, all the cases were stained with Periodic acid schiff. Among benign cases 68/75 (90.7%) were found to be positive, 8/10 (80%) cases of pre malignant were positive and 8/15 (53.3%) cases of malignant were positive with p value 0.001(Table 1).

All the sections were subjected to Alcian blue stain to detect presence of acidic mucins. It was positive in 10/15 (66.7%) cases of malignancy, 2/10 (20%) pre malignant cases and 1/75(1.3%) benign case with with p value <0.01 (Table 2). The sections were also subjected to Mucicarmine to detect presence of acid mucins. It was positive in 8/15 (53.3%) malignant cases, 2/10 (20%) pre malignant cases and 1/75 (1.3%) benign case with p value <0.001 (Table 3)

Table. 1. Association between diagnosis and PAS staining.

Sl. No.	PAS	Diagnosis			p value#
		Benign n(%)	Premalignant n(%)	Malignant n (%)	
1	Negative	7 (9.3)	2 (20)	7 (46.7)	0.001*
2	Positive	68 (90.7)	8 (80)	8 (53.3)	

Note: # p value based on Chi-square test,* statistically significant (p<0.05)

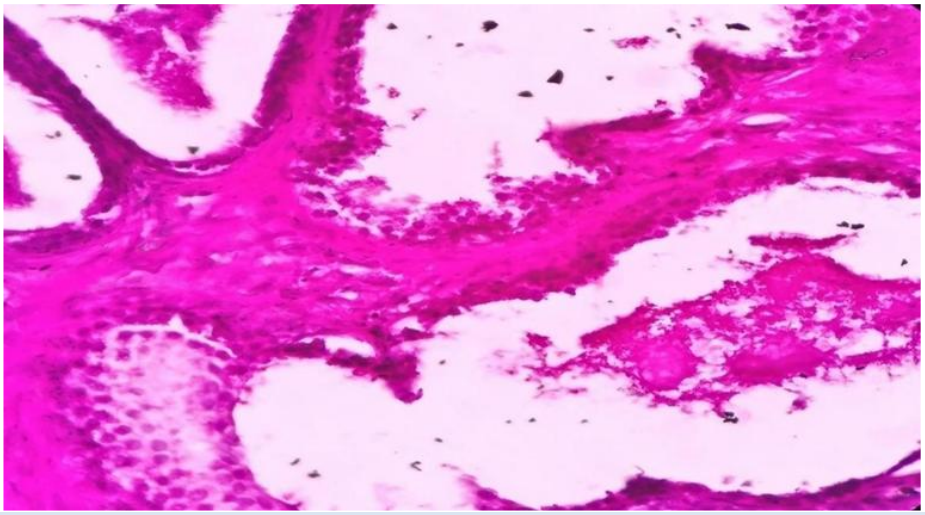

Figure. 1 Microscopic picture showing positive PAS staining in a case of BPH (40x).

Table. 2. Association between diagnosis and Alcian blue staining.

Sl. No.	Alcian blue	Diagnosis			p value#
		Benign n(%)	Premalignant n(%)	Malignant n (%)	
1	Negative	74 (98.7)	8 (80)	5 (33.3)	<0.001*
2	Positive	1 (1.3)	2 (20)	10 (66.7)	

Note: # p value based on Chi-square test,* statistically significant (p<0.05).

Discussion

Differentiating well differentiated carcinoma from benign lesions is always a challenge for the pathologists. Hence, there is a need for a useful tool which is cost effective, especially at the resource poor settings. Mucins are present in the glandular tissue and can be stained by various stains such as periodic acid Schiff (PAS), Alcian blue and Mucicarmine. According to

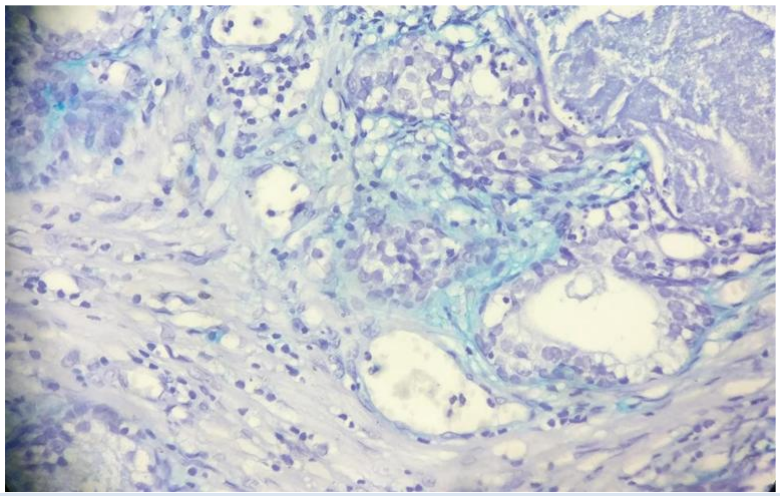

Figure. 2 Microscopic picture showing positive Alcian blue staining in a case of malignancy (40x).

Table. 3. Association between diagnosis and Mucicarmine staining.

Sl. No.	Mucicarmine	Diagnosis			p value#
		Benign n(%)	Premalignant n(%)	Malignant n (%)	
1	Negative	74 (98.7)	8 (80)	7 (46.7)	<0.001*
2	Positive	1 (1.3)	2 (20)	8 (53.3)	

Note: # p value based on Chi-square test,* statistically significant (p<0.05).

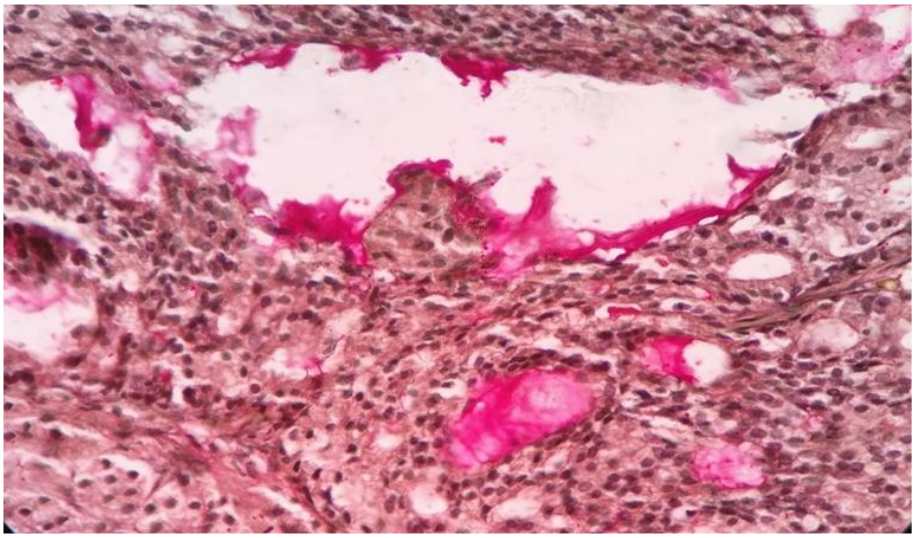

Figure. 3 Microscopic picture showing positive Mucicarmine staining in a case of malignancy (40x)

many studies, acidic stains are present in malignant lesions, but not in benign ones. And neutral mucins are seen more frequently in benign lesions than in malignant lesions.2

The findings of positivity with acidic mucins (alcian blue and mucicarmine) in benign cases in our study (1.3%) are comparable with the study conducted by Agarwal et al2 (0%), Pinder et al3 (0%) and McMahon et al4 (5%).

Among malignant lesions, alcian blue positivity was seen in 66.7% cases, results in concordance with Arora et al.5 (60%). Mucicarmine positivity was seen in 53.3% cases. All the well differentiated carcinomas were positive for acidic mucins.

All the cases positive for alcian blue and mucicarmine were of well differentiated carcinoma, implicating that low grade or well differentiated carcinoma secrete acidic mucin which is usually not seen in high grade or poorly differentiated carcinomas.

Acidic mucins are usually positive in well differentiated carcinomas and usually negative in case of benign lesions. Hence we conclude that alcian blue and mucicarmine stains can be of immense help to pathologists in differentiating carcinomas from benign lesions.

In conclusion, Mucin stains such as Alcian blue and Mucicarmine can detect the presence of acidic mucins secreted by the malignant glands of the well differentiated carcinomas and therefore these stains can be used as an adjunct in easily differentiating few well differentiated carcinoma and benign cases.

Conflict of interest

None to declare.

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None

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