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PATHOLOGY MATTERS

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Serum Protein Electrophoresis

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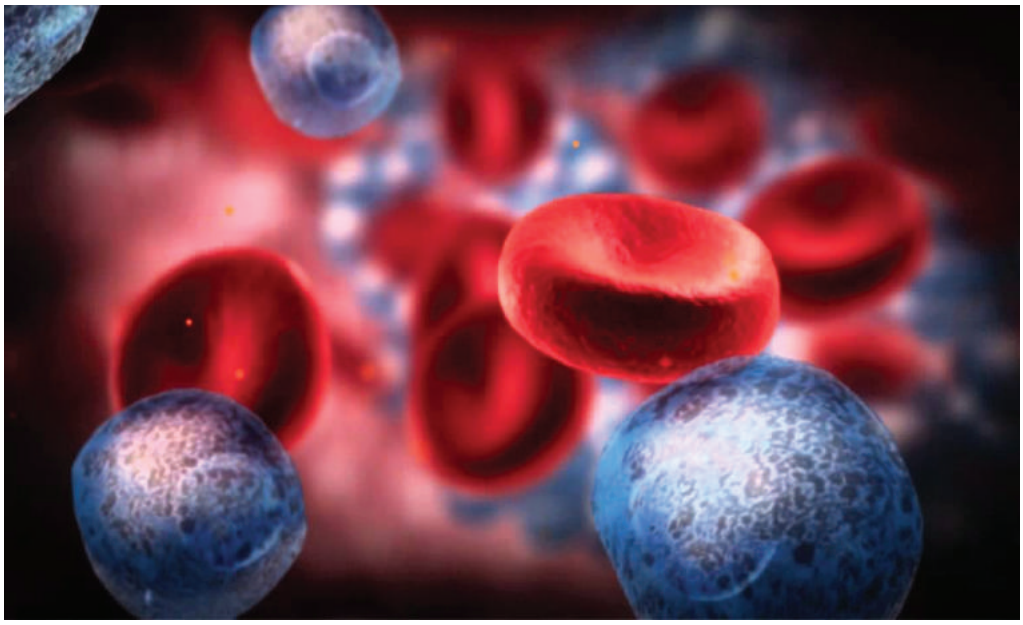

Serum protein electrophoresis is used to identify patients with multiple myeloma and other serum protein disorders. The utilization of these assays has allowed for improved diagnosis of numerous monoclonal plasma cell disorders, from the asymptomatic monoclonal gammopathy of undetermined significance (MGUS) and smouldering multiple myeloma to the symptomatic multiple myeloma, Waldenström's macroglobulinemia, amyloidosis and plasmacytoma.

The clinical presentation of multiple myeloma can be extremely varied. The classical complications are often abbreviated into the acronym 'CRAB': consisting of hypercalcaemia, renal impairment, anaemia and bony lesions. A combination of these symptoms should heighten diagnostic suspicion for myeloma.

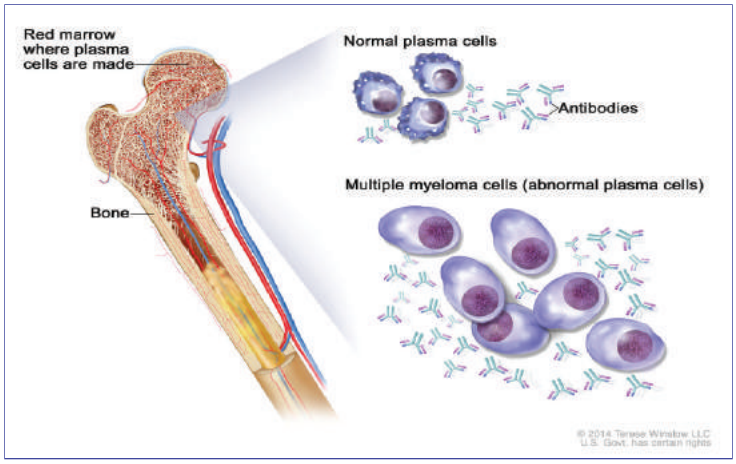

Figure 1: Diagram of Multiple Myeloma[1]

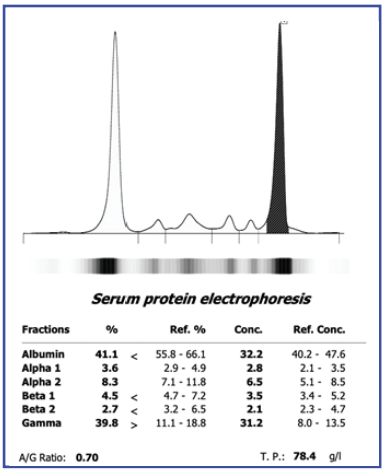

Figure 2a):
A monoclonal peak detected in Serum Protein Electrophoresis (SPE)

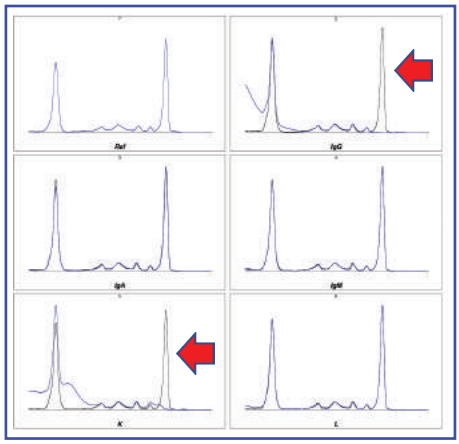

Figure 2b):
The monoclonal peak identified as IgG kappa paraprotein by immunotyping.

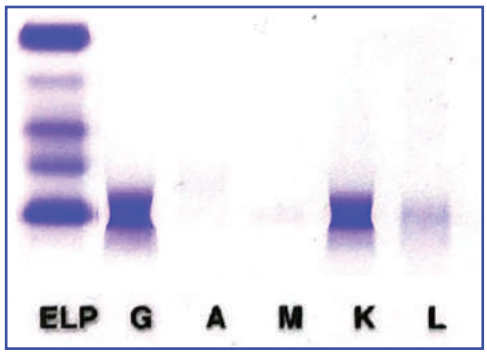

Figure 2c):
Immunofixation method for paraprotein typing; IgG Kappa paraprotein.

Serum protein electrophoresis (SPE) commonly is performed when multiple myeloma is suspected and it should be considered in other situation such as unexplained peripheral neuropathy, new onset anaemia associated renal failure or insufficiency and bone pain. Back pain in which multiple myeloma is suspected, hypercalcaemia attributed to possible malignancy, rouleaux formation noted on full blood picture, renal insufficient with associated serum protein elevation and unexplained pathologic fracture or lytic lesion identified on radiograph.

SPE separates proteins based on their physical properties, and the subsets of these proteins are used in interpreting the results. SPE with immunofixation (IFE) or immunotyping (IT) is widely and commonly used in clinical diagnostic laboratories. Evaluating a patient with suspected multiple myeloma involves establishing evidence of paraprotein with SPE and IFE or IT together with serum free light chains (FLC) analysis and urine bence jones protein (BJP) screening.

A homogenous discrete paraprotein band can be detected by SPE and IFE/IT will increase the diagnostic sensitivity to 93% and determines the nature or types of paraprotein involved. The most common type of heavy chain produced in myeloma is IgG, followed by IgA and then IgD. IgM multiple myeloma is a very rare entity and the presence of an IgM paraprotein should raise suspicion of the related disease Waldenström's macroglobulinaemia/lymphoplasmacytic lymphoma.

Another type of myeloma is light chain myeloma either Kappa light chain or Lambda light chain disease, where it's characterized by the presence of only light chain immunoglobulins in the blood and urine without a heavy chain component. A serum FLC analysis must always be requested, as a small percentage of patients do not have measurable disease on SPE and IFE and would be otherwise missed.

The main utility of SPE is for diagnostic and monitoring of multiple myeloma, it should be recommended as a preliminary test for the suspected cases of multiple myeloma. The combination of SPE, IFE/IT, serum FLC tests and urine BJP will increase the diagnostic sensitivity and should always to be considered whenever patient is suspected with myeloma.

References:

1. Multiple Myeloma. Adapted from https://www.teresewinslow.com/circulatory/ozalvjjq3hyulni42zop61nk7qk9bg. Updated on 2014.
2. Jillian R Tate, The Paraprotein – an Enduring Biomarker, Clin Biochem Rev. 2019 Feb; 40(1): 5–22.
3. Renee Eslick Dipti Talaulikar, Multiple myeloma: from diagnosis to treatment. Australian Family Physician. 2013 October; 42(10).
4. Jillian Tate et al. Recommendations for standardized reporting of protein electrophoresis in Australia and New Zealand. Annals of Clinical Biochemistry. 2012; 49: 242–256.

A Rare Case of Adenocarcinoma of Bartholin's Gland: Case Report

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Background

Bartholin gland carcinoma is a rare malignancy of vulva, and accounts for less than 1% of vulval neoplasms. Squamous Cell Carcinoma (SCC) of the Bartholin gland is the commonest malignancy. The aim is to document a rare entity of Bartholin gland adenocarcinoma.

Case Details

A 58-year-old lady presented with a clinical entity of Bartholin's cyst. Grossly, three fragments of greyish tissue, largest measuring 12x10x6mm and smallest measuring 8x5x3mm were received. Entire tissue was submitted in one block. Routine H&E and IHC studies were carried out and the histological features and IHC analysis were reported digitally using Aperio Image Scope.

Result

Section showed a normal thinned out stratified squamous epithelium above with well delineated foci of well to moderately differentiated adenocarcinomatous glands, closely packed together, and at places mimicking a lobular configuration (Figure 3a and 3b). Individual glands with stratification of enlarged hyperchromatic or vesicular nuclei with prominent nucleoli, along with focal mucinous content were observed. Areas of dense fibrosis and hyalinization surrounding the glandular component was observed in all the three fragments studied.

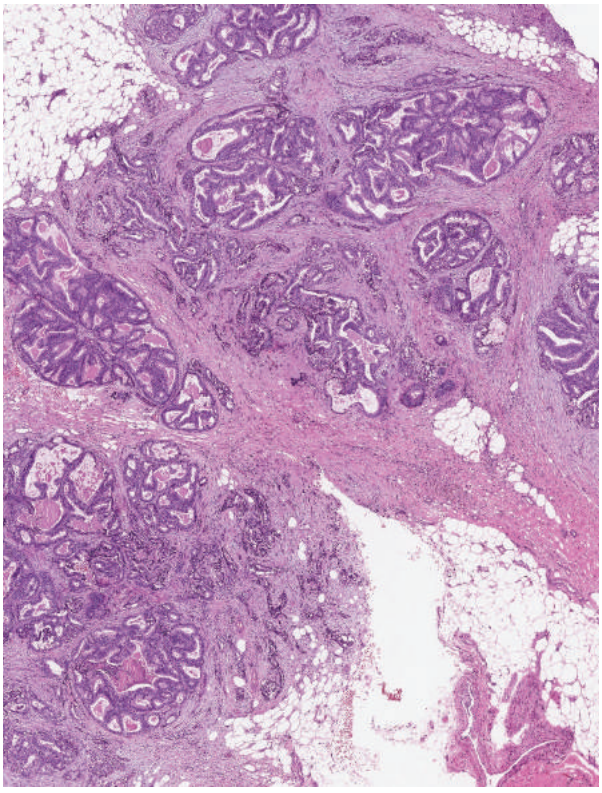

Figure 3a): Bartholin gland adenocarcinoma. Low Power, H&E

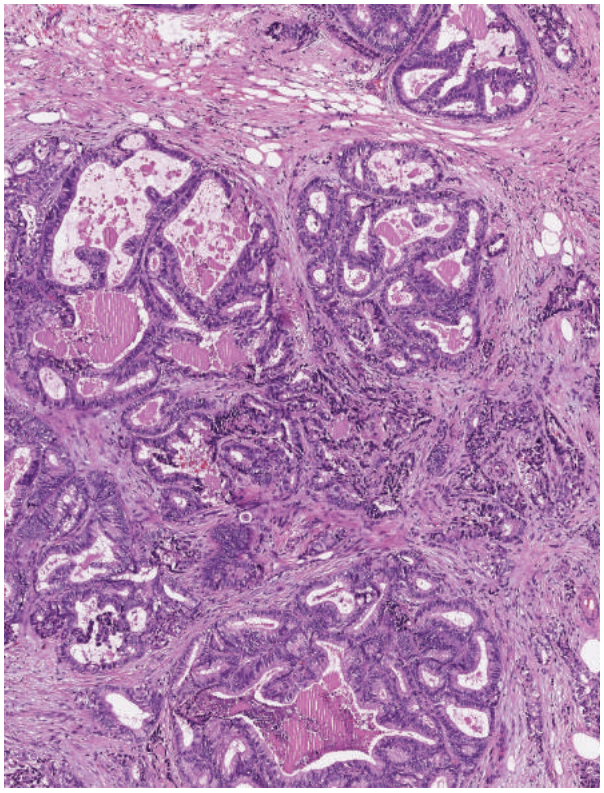

Figure 3b): Bartholin gland adenocarcinoma. High Power, H&E

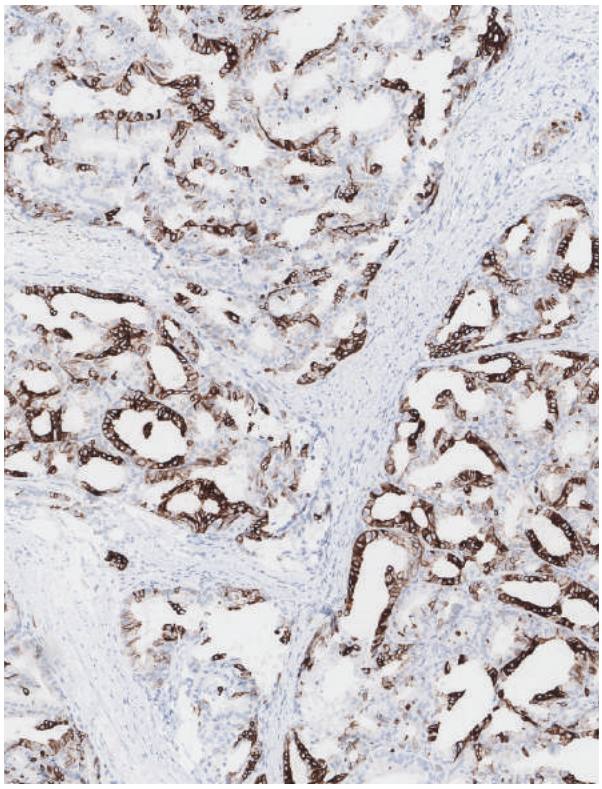

Figure 3c): Bartholin gland adenocarcinoma. CK7 positivity

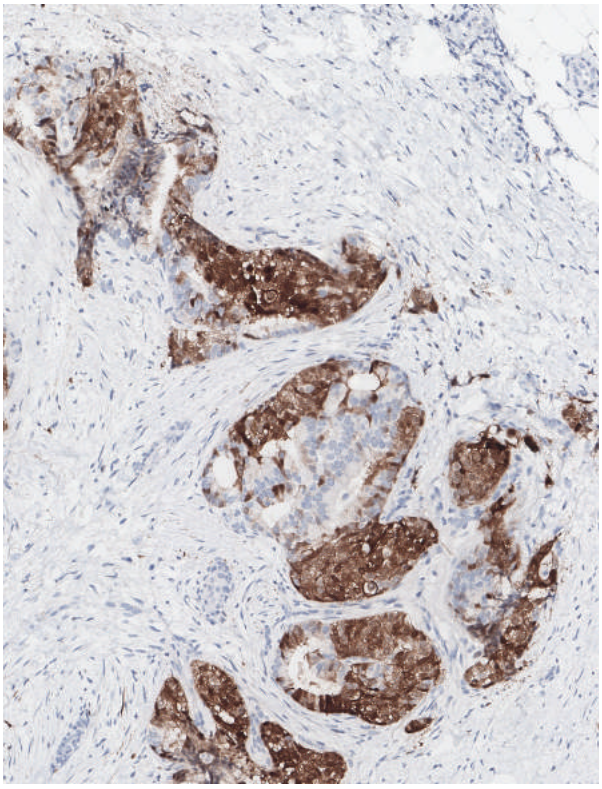

Figure 3d): Bartholin gland adenocarcinoma. p16 positivity

Glandular component showed positivity for CK7 (Figure 3c) and focal positivity for p16 (Figure 3d) and was negative for CK20. Morphological features with IHC studies confirmed adenocarcinoma of Bartholin gland.

Conclusion

Though extremely rare in occurrence, an entity of adenocarcinoma of Bartholin gland needs to be considered in Bartholin gland lesion, especially over the age of 50 years. The management of such cases is extremely different when compared to conventional Bartholin Cyst and requires prompt recognition, critical result documentation and further clinical discussion with the Consultant Gynaecologist. This is the first case of Bartholin gland adenocarcinoma documented in Innoquest Pathology, Malaysia.