



A SIMPLE RAPID CELL BLOCK TECHNIQUE FROM BLADDER WASH –A VALUABLE DIAGNOSTIC TOOL IN DETECTION OF BLADDER TRANSITIONAL CELL CARCINOMA: AN INTERESTING CASE STUDY.

Pathology

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ABSTRACT

Cytological diagnosis of malignancy in body fluids needs adequate cellularity and good cyto morphology. Diagnosis will be made easy if architectural pattern is also appreciated. Various techniques have been tried for extracting sufficient cells from body fluids and for establishing good morphology to improve the diagnostic accuracy. We tried a new cell block technique for cytological study of bladder wash fluid sample and diagnosed bladder Transitional cell carcinoma with good architectural pattern and cytomorphology. This cell block preparation is a simple, rapid, less expensive, reliable and valuable tool for diagnosing malignancy and can be used as a supplementary procedure to improve the diagnostic accuracy.

KEYWORDS

Cell block, TCC, Bladder wash, Fluid cytology, Urine cytology.

INTRODUCTION –

Cytological examination of serous body fluids is one of the commonly performed investigation for detecting malignant cells [1]. But it is a challenging one if the fluid sample is hypo cellular as well as due to mimicking of reactive and reparative atypical cells with malignant cells in certain places. Various techniques are employed to retrieve cells from fluid sample for improving cytological diagnosis. It includes direct smear, sediment smear, cytospin smear, membrane filter preparations and cell block technique [2]. This paper is presented to explain the efficacy of new, simple, rapid cell block technique of bladder wash cytology in diagnosing Transitional cell carcinoma.

CASE HISTORY

51 years old male presented with a complaints of difficulty in passing urine and mild breathlessness for one week duration .He was a known diabetic and chronic kidney disease patient and examination showed mild pallor, pedaloedema with normal vital signs. Laboratory investigations showed Hb value of 8.1G%, Urea -99mg%, creatinine-6.6mg%, Fasting blood sugar-219mg%, Post prandial sugar- 343mg% with normal liver function tests, electrolytes and lipid profile. Urine was yellowish brown in colour with cloudy appearance and examination showed positivity for blood (+++) and RBC deposits (80-100/hpf). Pus cells and epithelial cells were 2-4/hpf only. Ultra sonogram revealed small ill-defined projection in bladder wall with a probable diagnosis of? Bloodclot. Patient was catheterized and noted mild meatal stenosis with haematuria. Cystoscopic examination revealed 2 cm size papillous growth in right lateral wall of bladder near ureteric orifice. Bladder wash was done and sample was sent for cytological screening for malignancy. Smear made from the sediment showed less cellularity with few aggregates of mild atypical transitional epithelial cells (Figure- 1). Smear made by cytospin method showed more cellularity but all the cells are large with abundant eosinophilic cytoplasm and mild nuclear pleomorphism creating confusion with squamous epithelium (Figure- 2). So we tried cell block study from the fluid by the following procedure

1. Centrifugation of all the fluids received was done with 3000rpm for 3-5 minutes.
2. All the sediments were collected in one tube and again centrifugation was done with 3000rpm for 3-5 minutes.
3. Supernatant fluid was discarded and sediment was placed over glass slide.
4. Sediment was allowed to stand for 2-3 minutes. The fluid part of sediment was automatically drained off and granular particles of cells were gathered together at one place of glass slide with the help of needle simultaneously.
5. A drop of 70% alcohol fixative was added to the gathered sediment and it was kept for 3 minutes.

6. Alcohol made the sediment as dry button by acting as dehydrating agent and also as fixative.
7. The sediment was gently scrapped off as a single button and transferred to the container containing 10% formalin
8. Cell button was processed after 1 hour routinely for histopathological study.

Section from cell block showed nice papillary architecture of tumour cells with loss of polarity and malignant features of nucleus which made the diagnosis of Transitional cell carcinoma easier. (Figure 3, 4, 5).

We reported this case for the simplicity of cell block technique and the value of it in the early diagnosis of bladder cancer.

DISCUSSION

The common type of bladder cancer is Transitional cell carcinoma (TCC) for which urine sample is tested for presence of malignant cells. Because of hypocellularity and low degree of sensitivity and specificity for low grade lesions it usually used as an adjunct for diagnosing bladder cancer. [3]. the combined study of urine cytology and cystoscopic biopsy played a large role in diagnosing bladder malignancy. Many studies were done to overcome the hypocellularity for improving the diagnostic accuracy of bladder cancer [4]. Seung et al reported CellprepPlus could be first line of screening tool of urine than conventional smear preparation for bladder malignancy. But architectural pattern were usually better appreciated in cell block study than this liquid base cytological preparation. Many studies showed various techniques of cell block preparation [5]. Cell block preparation time was prolonged in some studies where they kept the centrifuged sample for 2-24 hours undisturbed for cell button formation [6]. But in our case within 15 -20 minutes cell button was formed. Though the time varied depending on the cellularity of the sample, addition of alcohol shorten the duration in our case by acting as dehydrating agent. One more advantage in this method was alcohol act as fixative also .So our cell block technique was a rapid process. Sandeep et al prepared cell block using thromboplastin and pooled plasma for better condensation of sediment and button formation. [7]. Awad et al utilized 2% agarose gel for cell block preparation [8]. But we did not use any such material for better condensation and button formation. Simple automatic draining of fluid by keeping it in glass slide and gathering of particulate matters with needle and addition of alcohol alone was sufficient for button formation that yielded better cellularity and nice architectural morphology in our case. So it was economically cheap also. Moreover here we tested bladder wash sample rather than voided urine which showed more cellularity than voided urine sample. The probable reason for this might be enhancement of exfoliation of fragile tumour cells by bladder wash. Ayden et al study supported our finding and they also noticed good cellularity, cytomorphology without cytolysis in

bladder wash sample [9]. But Anna et al reported that there was no significant variation in cytological efficacy of both urine and bladder wash samples [10]. In our case, we prepared a cell block from bladder wash sample and the efficacy of sediment smear, cytospin smear and cell block sections were compared. The cellularity was less in sediment smear, more cellular in cytospin smear and better architectural and cytomorphological differentiation was appreciated in cell block preparation. So cell block can be used as a routine screening procedure in case of suspected bladder malignancy and bladder wash sample will be a more ideal sample rather than voided urine to obtain sufficient cellularity. Another advantage of cell block preparation is multiple sections can be taken for higher studies like special stain, Immunohistochemistry for diagnosis as well as for prognostic consideration. This case is reported in view of this rapid, simple, economical and reliable cell block technique which act as a supplementary tool for better appreciation of morphology and increasing the diagnostic accuracy of malignancy.

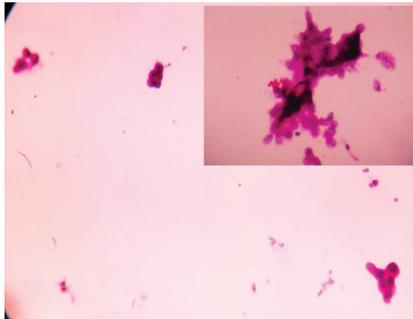


Figure -1. Photomicrograph of sediment smear showing few small aggregates of atypical epithelial cells (Inset –large aggregates). (H x Eosinx400)

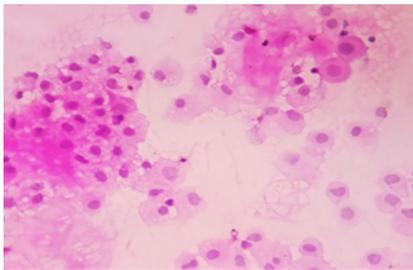


Figure -2. Photomicrograph of cytospin smear showing few aggregates and scattered large squamoid atypical epithelial cells (H x Eosinx400)

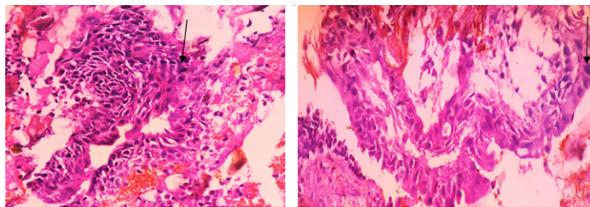


Figure -3& 4. Photomicrograph of cell block section showing papillary architecture of Transitional epithelium with loss of polarity, nuclear irregularity and hyperchromacia(Arrow). (H x Eosinx400)

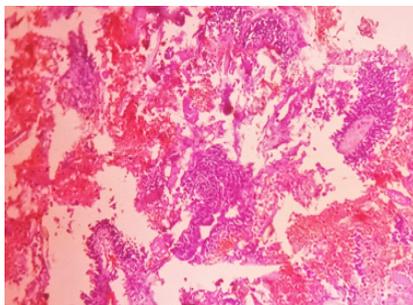


Figure -5. Photomicrograph of cell block section showing many papillary fragments of Transitional epithelial tumour cells in haemorrhagic background. (H x Eosinx100)

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