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CYTOLOGICAL STUDY OF ATYPICAL CELLS IN HEMATURIA SAMPLES AND ITS CLINICAL SIGNIFICANCE

Pathology

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ABSTRACT

INTRODUCTION: Urine cytology is a extremely valuable non invasive test to study the exfoliated cells from kidney, ureter, bladder, prostate and urethra. Atypical cells in urine cytology is very rarely seen. Malignancy, instrumentation, lithiasis, inflammation, infection with human polyomavirus, effects of drugs, and radiotherapy are some of the causes for presence of atypical cells in urine cytology It is a cheap and non inavasive test used in screening for bladder carcinoma.

AIM AND OBJECTIVES: we conducted this study to analyse the diagnostic value of urine cytology for detecting atypical urothelial cells in pre malignant and malignant tumors of bladder

MATERIALS AND METHODS: A total of 4015 freshly voided urine samples were received and studied during the period of June 2015 to June 2016 in a tertiary health care center of kancheepuram district of Tamilnadu. Hematuria samples were extensively studied through microscopic examination for the presence of atypical cells and malignant cells

RESULTS AND OBSERVATION: Out of 4015 urine samples , 182 samples are from cases of hematuria (4.5%) including both gross and microscopic hematuria. Out of 182 only 40 samples showed atypical cells. Of which only 6 cases are proved to be malignant and other 16 cases are due to reactive changes.

CONCLUSION All hematuria Samples should be studied microscopically to rule out malignancy. Accuracy of cytology in detecting atypical cells is directly proportional to the grade of tumor. Higher the grade and higher the accuracy .

KEYWORDS:

URINE CYTOLOGY, HEMATURIA, ATYPICAL CELLS, CARCINOMA BLADDER.

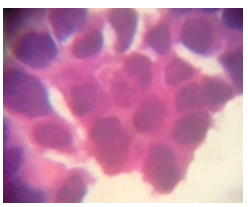
INTRODUCTION: Urine cytology is a cheap, rapid and non invasive test. It is done in cases of urinary tract infections, urinary tract stones stones and carcinoma. It is a Exfoliative cytology. Atypical urothelial cells can be seen in all these conditions, but predominantly in premalignant and malignant conditions. Urine cytology not only helps in screening and detecting carcinoma but also to monitor tumor recurrence in post operative follow up. Close follow up of post operative patients by cytology helps in early detection of any recurrence.

AIM AND OBJECTIVES: we conducted this study to analyse the diagnostic value of urine cytology for detecting atypical urothelial cells in pre malignant and malignant tumors of bladder

MATERIALS AND METHODS: A total of 4015 freshly voided urine samples were received and studied during the period of June 2015 to June 2016. About 5 to 10 ml of urine was centrifuged for 30 minutes at a speed of 1500 rpm. Centrifuged deposit was made into 3 to 6 slides and was extensively studied for the presence of any atypical cells and malignant cells. Thorough microscopic examination was done to detect the presence of any atypical cells especially in cases of hematuria with suspicious clinical history or positive family history. First early morning sample can be avoided as cell will be degenerated in that sample. Three samples on three consecutive days for each patient can be analysed to give accurate results as shedding of cancer cells in the voided urine is variable.

FIGURE 1

FIGURE 1: SHOWS REDDISH HEMATURIC SAMPLE



FUGURE 2

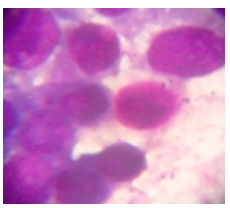


FIGURE 3

FIGURE 2 & 3: SHOWS ATYPICAL UROTHELIAL CELLS WITH INCREASED NUCLEAR CYTOPLASMIC RATIO AND SCANTY CYTOPLASM

RESULTS AND OBSERVATION: Out of 4015 urine samples, 182 samples are from cases of hematuria (4.5%) It includes both gross and microscopic hematuria. Out of 182 samples only 40 samples showed atypical cells. Of which 6 cases are proved to be malignant and other 16 cases are due to reactive changes. In urine cytology cancer cells can be obscured by RBCs and autolysis artefacts. Microscopic hematuria may be intermittent in bladder carcinoma. hence a negative result does not exclude the diagnosis. Atypical cells are seen in inflammatory conditions, uro lithiasis, systemic and intra vesical therapy, and may also occur in urothelial tumors of all grades. The atypical cells are small hyperchromatic with nuclear enlargement and altered nucleo cytoplasmic ratio. Mitotic figures may be seen. In low grade papillomas there is no significant diagnostic finding and it is difficult to diagnose such tumors. Occasional erythrocytes and atypical cells such as elongated cells, without any inflammation and necrosis in a clean background. Cytologic finding of highly pleomorphic tumor cells is important because extensive search for the primary is warranted in such cases. Grade 2 and grade 3 tumors are recognized easily by the presence of markedly atypical urothelial cells and recognizable cancer cells, occurring singly or in loosely structured clusters. Smaller cancer cells were of a higher grade than tumors with larger cells.

DISCUSSION:

Many controversies exist regarding the urine cytology and its usefulness in cases of malignancy. Debates go on whether to do urine cytology or not for bladder malignancies. Some researchers say that urine cytology has low predictive value. But aggressive carcinoma of the bladder can be detected easily in urine cytology. Only low grade or premalignant lesions are difficult to detect and diagnose through urine cytology. It needs experience in the field of urology along with clinico radiological correlation. No specific urinary assay or specific blood test is available to detect bladder cancer. So Urine cytology is very useful test which not only helps in screening and detecting

carcinoma but also to monitor tumor recurrence in post operative follow up.[1]

Asymptomatic malignancies and in situ carcinoma can be diagnosed by urine cytology in routine screening of industrial workers.

All non papillary urothelial cancers (invasive or in situ) can be readily recognized in the urinary sediment because of unique morphology.

An unequivocal cytologic diagnosis of urothelial carcinoma in the absence of cystoscopic evidence of a bladder tumor is usually diagnostic of a flat carcinoma in situ.

obtain biopsies of the bladder, even in the total absence of cystoscopic abnormalities. rule out a bladder lesion first. by bladder barbotage that provides a good sampling of bladder epithelium with minimal contamination from the upper urinary tract.[2]

Histologic Variants of Urothelial Carcinoma

Squamous cell Carcinoma (SCC) is common among patients with Schistosoma hematobium infestation, SCC originate from areas of squamous metaplasia or leukoplakia, graded according to the degree of differentiation, bizarre configuration, with eosinophilic, often markedly keratinized cytoplasm. The nuclei are pyknotic and occasionally may be totally submerged by keratin formation with resulting formation of "ghost" cells. Adenocarcinoma

Risk factors for adenocarcinoma of the lower urinary tract are: extensive intestinal metaplasia, extrophic bladders and the benign villous adenoma, cystitis glandularis and nephrogenic adenomas.

Malignant cells in the urinary sediment or bladder washings calls for a major investigative effort, even in the absence of cystoscopic or radiographic abnormalities. Koss states that "

In experienced hands, carcinoma of the bladder, grade II or above, was accurately identified in 78% of all cases. For high-grade tumors, the diagnostic accuracy reached 91%." [3]

The purpose of monitoring patients treated for tumors of the lower urinary tract is to detect tumor recurrence or formation of new tumors in a timely fashion. The success of cytologic monitoring depends greatly on the type of tumor and the mode of therapy.

Radiotherapy either as a primary treatment mode or as an adjunct to surgical treatment of invasive tumors, poses a special challenge to cytologic follow-up because of radiation-induced cell changes in benign and malignant cells

Urinary tract cytology has so far not replaced cystoscopy in the follow-up and identification of new low-grade papillary bladder tumors. The best method of monitoring bladder tumors is by cytologic analysis of voided urine specimens. After radical cystectomy, the patients must be monitored by periodic cytologic examination of urine from the ileal bladder. Each monitoring sequence should be based on three urine samples obtained on consecutive days The presence of cancer cells is always indicative of a recurrence or progression of urothelial carcinoma. Cytologic analysis is more sensitive than multiple biopsies in predicting tumor recurrence or progression.

CONCLUSION

Cytological findings should always be correlated with clinical history and cystoscopic findings before giving a impression. Urine cytology is still an adjunct investigation for the cystoscopy in diagnosing bladder cancer. Follow-up and multiple bladder biopsies may be required to rule out a malignancy.

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