ABSTRACT

OBJECTIVE: To determine the serum sodium level in transurethral resection of the prostate (TURP)

PATIENTS AND METHODS: This cross sectional type descriptive study was conducted at a private hospital Hyderabad and at tertiary care hospital attached with Ghulam Muhammad Maher Medical College, Sindh Pakistan from June 2009 to November 2009. All patients above 45-75 years of age present with history of urinary frequency, urgency, urgency incontinence, voiding at night, weak urinary stream, hesitancy, intermittency, through outdoor patient department (OPD) of the hospital, diagnosed as benign prostate hyperplasia (BPH) and planned for TURP were evaluated further for their serum sodium level preoperatively as well as postoperatively. The independent t test was applied at 95% confidence interval to compares the mean serum sodium level and the p values ≤ 0.05 was considered as statistically significant.

RESULT: Total 40 patients underwent for TURP with mean age 58.57 ± 8.72 (SD). The urinary frequency and urgency was observed in 32(80%) patients, urgency incontinence in 34 (85%) patients, voiding at night in 28(70%) patients, weak urinary stream in 15(38%) patients and hesitancy in 33(83%) patients. The hyponatremia was observed in 28(70%), preoperatively mean serum sodium was 140.7500±1.0561 where as postoperatively it was 128.9500± 8.7617 (p=<0.001).

CONCLUSION: Our study identified the decrease in serum sodium level (hyponatremia) during transurethral resection of the prostate.

KEY WORDS: Sodium, Transurethral resection of the prostate, TURP, TURR, Hyponatremia.
Informed consent was taken from every patient or from attendant of patients. The data was entered, saved and analyzed in SPSS version 10.00. The mean and standard deviation was calculated for age and serum sodium level. The frequency and percentage of sodium level in TURP was also calculated. The independent t test was applied to compares the means of serum sodium preoperatively as well as postoperatively at 95% confidence interval and the p values ≤ 0.05 was considered as statistically significant.

RESULTS:
Total 40 patients of BPH underwent for TURP with mean age 58.57 ± 8.72 (SD). In our study we found hyponatremia during TURP, their frequency, percentage and mean serum sodium level preoperatively as well as postoperatively is given in Table: 1-2. The urinary frequency and urgency was observed in 32(80%) patients, incontinence in 34 (85%) patients, voiding at night in 28(70%) patients, weak urinary stream in 15(38%) patients, hesitancy in 33(83%) patients.

DISCUSSION:
The transurethral resection of the prostate is a less invasive procedure than open surgery treatment options and recovery time is usually quicker. The findings of present study is consistent with the study by Ali MN, hypothesized that transurethral resection of the prostate is a considerably safe procedure and can effectively replace open prostatectomy in majority of cases with an acceptable morbidity and low mortality rates. Transurethral resection of the prostate (TURP) is complicated by fluid absorption of fluid (≥1000mL) which leads to hyponatremia. Acute hyponatremia with blood sodium concentration below 115-120meq/L could be potentially serious to patient. Therefore, after reviewing literature and dire need, the present study was conducted to private hospital of Hyderabad. The current study focused on the hyponatremia during transurethral resection of the prostate (TURP). This study provides the knowledge, idea and protocols that have an important role in the management parameters of patient undergoing transurethral resection of the prostate (TURP).

PATIENTS AND METHODS:
This cross sectional type descriptive study was conducted at a private setup (hospital), Hyderabad and at tertiary care hospital attached with Gulham Muhammad Maher Medical College Sindh, Pakistan from June 2009 to November 2009. All patients above 45-75 years of age present with history of urinary frequency, urgency, urine incontinence, voiding at night, weak urinary stream, hesitancy, intermittency, through outdoor patient department (OPD) of the hospital, were diagnosed as benign prostate hyperplasia (BPH) and planned for TURP were evaluated and enrolled in the study. The detail history was taken; complete clinical examination and routine investigation were performed. An informed consent was taken from all patients having benign prostate hyperplasia (BPH) and planned for TURP. All such patients were assessed for serum sodium level preoperatively as well as postoperatively by taking 3cc venous blood sample and send to laboratory for analysis. The fluctuation in the value of serum sodium level was estimated according to their parameters and reference range i.e. 135 mmol/L - 145 mmol/L (normal), whereas the value <135 mmol/L and >145 mmol/L was considered as disturbed i.e. hyponatremia and hypernatremia, respectively. The data was collected on pre-designed proforma. During the study all the relevant rules of medical ethics were kept in mind.

The patients who refused to participate in the study, the patients who are already on diuretic therapy, the patients with diarrhea or vomiting, known cases of renal failure, congestive cardiac failure and liver cirrhosis were considered in exclusion criteria. The informed consent was taken from every

### Table: 01

<table>
<thead>
<tr>
<th>Serum sodium</th>
<th>n = 40</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyponatremia</td>
<td>28</td>
<td>70%</td>
</tr>
<tr>
<td>Normal</td>
<td>12</td>
<td>30%</td>
</tr>
</tbody>
</table>

### Table: 02

<table>
<thead>
<tr>
<th>Serum sodium level</th>
<th>Preoperative (mmol/L)</th>
<th>Postoperative (mmol/L)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>140.7500 + 1.0561</td>
<td>128.9500 + 8.7617</td>
<td>&lt;0.001*</td>
<td></td>
</tr>
</tbody>
</table>

Results are expressed as Mean ± Standard deviation

*P value is statistically significant
third of the maximum hyponatraemia and is still dominated by the plasma-derived sodium excreted during the glycine-induced osmotic diuresis. The results of study by Shariat, et al had somewhat different presentation and displayed no statistically significant changes in serum electrolytes but other identified variables were hypotension (8.3%), hypertension (7.8%), nausea (6.4%), and vomiting (2.8%). However, regarding the complications our study noticed hypotension in 14 (35%) patients, nausea in 28 (70%) patients, vomiting in 30 (75%) patients, and headache in 10 (25%) patients. It is very difficult to avoid occurrence of electrolyte disturbance during TURP, the best prevention could be obtained by adopting a correct surgical technique. Procedures lasting for more than 60 minutes and prostate glands weighing more than 60 grams could be associated with more complications.

The present study evaluated the serum electrolyte disturbances i.e. hyponatremia during TURP, the current study open a forum of discussion and provides an initial review and changes observed during TURP procedure. The study should be continued to advance and extended phase at different clinical setups to provide more knowledge regarding electrolyte changes during transurethral resection of the prostate.

CONCLUSION:
Our study identified the decrease in serum sodium level (hyponatremia) in transurethral resection of the prostate and emphasized on appropriate measure to prevent serious and fatal complications. The preoperative levels of sodium should be estimated and effective measures should be made before taking up the patient for transurethral resection of the prostate.

REFERENCES:
12. Moorthy HK, Philip S. Serum electrolytes in turg syndrome – is the role of potassium under estimated?. Indian J Anaesth 2002;46(6):441-444