

NU Rounds

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Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring you “NU Rounds” which contains latest and interesting news in the field of Nephrology and Urology.

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Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Ltd

1. A multicenter study of urethrectomy during radical cystectomy for nonmetastatic urothelial carcinoma of the bladder.

Introduction:

Urethrectomy is a surgical procedure used to treat urethral tumours, pathology exhibiting prostatic stromal invasion, urethral tumour recurrence after radical cystoprostatectomy, and cystoprostatectomy specimens with a positive distal urethral margin.¹ The best way to treat the urethra in individuals after radical cystectomy (RC) is yet undetermined.² The goal of this study is to assess how urethrectomy affects perioperative and oncological outcomes in patients treated with RC for non-metastatic bladder urothelial carcinoma (UCB).

Only patients at high risk of urethral recurrence appear to benefit from urethrectomy during radical cystectomy.

Methods:

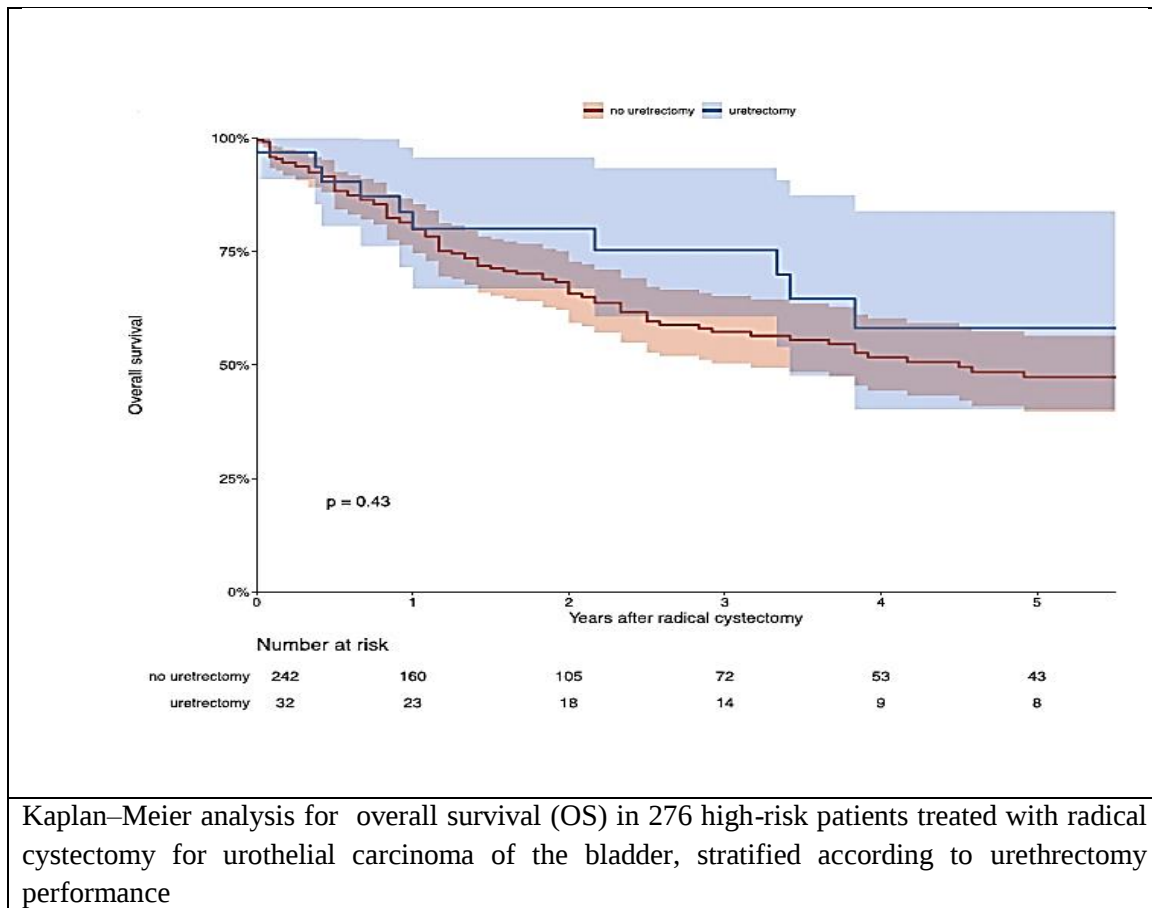
This retrospective analysis comprised five medical facilities and consecutive groups of patients who were treated with RC for non-metastatic UCB. The surgeon had complete authority over the scope of lymphadenectomy and urinary diversion, as well as the decision to get frozen section analysis (FSA) of the urethra and do urethrectomy. On the basis of tumour stage and general health state, physicians decided to give neoadjuvant and adjuvant chemotherapy. In univariable and multivariable Cox regression models, the effects of urethrectomy on progression-free (PFS), cancer-free (CSS), and overall (OS) survival were investigated. Patients at high risk for urethral recurrence (UR) (urethral invasion and/or bladder neck invasion and/or multifocality and/or prostatic urethra involvement) were studied in a subpopulation.

Results:

A total of 887 individuals with non-metastatic UCB were included in the study. At the time of RC, 146 of them had their urethrectomy. Patients with urethral invasion, T3/4 tumour stage, Carcinoma in situ (CIS), positive frozen section examination of the urethra, neoadjuvant chemotherapy, robotic RC, and/or an ileal conduit urine diversion were more likely to have urethrectomy. Patients who had a urethrectomy and those who did not had similar estimated blood loss and postoperative complication rates. PFS (HR 0.83), CSS (HR 0.93), and OS (HR 1.08) were not related with urethrectomy during RC. In a subpopulation of 276 individuals with a high risk of UR, urethrectomy during RC reduced the risk of UR.

Discussion:

The study looked at the effects of urethrectomy at the time of RC on perioperative and oncological outcomes in patients with non-metastatic UCB treated with RC. In this study, urethrectomy did not appear to improve survival outcomes in all individuals treated with RC for UCB. On the other hand, patients at high risk for UR were more likely to benefit from urethrectomy during RC.² This study found that individuals at high risk for UR had a better PFS following urethrectomy at the time of RC. Similarly, Hakoziaki et al. found that prophylactic urethrectomy improved mortality in patients with a high UR risk (many tumours and/or associated CIS).³



Conclusion:

For every patient treated with RC for UCB, urethrectomy at the time of RC did not improve survival outcomes. Patients at high risk for UR, on the other hand, are more likely to benefit from urethrectomy during RC. Risk factors, pathologic findings, and patient comorbidities should all be considered when deciding to undergo an immediate urethrectomy.

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3. Hakoziaki et al., Significance of prophylactic urethrectomy at the time of radical cystectomy for bladder cancer. Jpn J Clin Oncol. 2021 Feb 8;51(2):287-295.

2. A study on clinical factors linked to serum magnesium concentration in peritoneal dialysis patients.

Introduction:

Magnesium(Mg) supplementation is recommended for a variety of medical conditions. This is because magnesium has a wide range of actions in the body. Mg is essential for blood pressure control, muscular contraction, nerve function, and bone formation. Magnesium appears to have therapeutic importance in vascular calcification and mortality in patients with CKD, according to literature.¹ Hypomagnesemia has been associated with cardiovascular and all-cause mortality in hemodialysis patients. Clinical parameters related with Mg have not been adequately studied in individuals undergoing peritoneal dialysis (PD).²As a result, this study aimed to find out how important Mg concentration is in patients who are on peritoneal dialysis.

The serum Mg concentration was independently associated with the serum K concentration in patients undergoing peritoneal dialysis.

Methods:

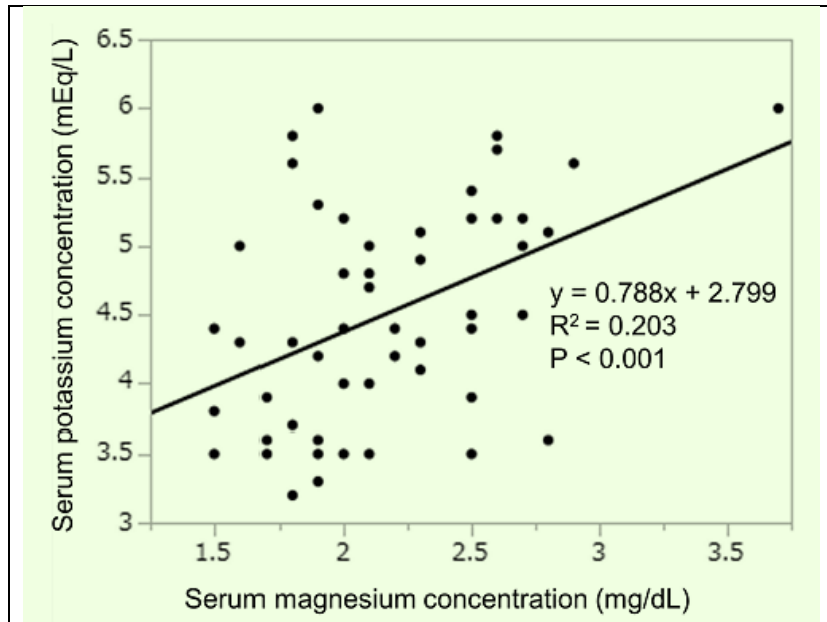
Researchers investigated the clinical factors associated with serum Mg concentration in patients undergoing PD in this single-center, retrospective observational research. Patients with PD, patients whose blood Mg content was tested for clinical purposes, and patients above the age of 18 were included in the study. Patients' age, sex, BMI, comorbidities, history of parathyroidectomy, PD period, hybrid HD (daily PD + once-weekly HD), medications, PD methods, PD dialysate Mg concentration, dialysis efficacy, 4-h dialysate/plasma creatinine ratio, and blood test results were all collected from their digital medical records. The enzymatic approach was used to determine the blood Mg levels. The normal range for Mg in the blood was 1.70 to 2.43 mg/dL. Extreme hypomagnesemia was defined as a serum Mg concentration of less than 0.75 mg/dL, whereas extreme hypermagnesemia was defined as a serum Mg value of more than 13.50 mg/dL. Univariate and multivariate analyses were used to look at the correlations between these factors and blood Mg levels.

Results:

Sixty patients who are on Peritoneal dialysis were studied. The serum Mg concentration was significantly associated with hybrid PD (daily PD + once-weekly hemodialysis) treatment ($\beta = 0.264$, $P = 0.04$), administration of phosphate binders ($\beta = 0.294$, $P = 0.02$), serum C-reactive protein concentration ($\beta = 0.318$, $P = 0.01$), serum potassium (K) concentration ($\beta = 0.451$, $P = 0.01$), and serum intact parathormone concentration ($\beta = 0.333$, $P = 0.01$). The serum Mg and K values were shown to have an independent relationship ($\beta = 0.333$, $P = 0.01$) in a multivariate analysis employing these parameters.

Discussion:

The blood K concentration was independently related with the serum Mg concentration in this investigation, according to multivariate analysis. Despite the fact that this was a small and observational research, this discovery is significant since few studies have looked at the role of Mg in individuals with PD. The serum Mg concentration may not be routinely assessed in all individuals in clinical practise. In patients with PD, however, proper monitoring of the serum Mg concentration is critical since the serum K concentration is linked to the serum Mg concentration.² Consistent hypokalemia is a risk factor for all-cause mortality and the development of PD-related peritonitis in patients undergoing PD, hence proper blood K concentration management is very crucial according to the previous literature.³



Significant correlation between serum magnesium concentration and serum potassium concentration in patients undergoing peritoneal dialysis.

Conclusion:

In patients undergoing PD, blood Mg levels were found to be linked to serum K levels independently. Magnesium may have a variety of implications not only in people with HD, but also in those with PD.

References:

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3. The Importance of a Healthy Lifestyle in Men with a higher Genetic Risk of Prostate Cancer

Introduction:

Prostate cancer is the most often diagnosed male cancer and the fourth highest cause of death from cancer in males worldwide. Although the exact causation of prostate cancer is unknown, heredity is undoubtedly involved. Prostate cancer risk is known to be influenced by genetics, ethnicity, and family history.¹ Patients with genetic or hereditary prostate cancer are more likely to acquire the disease at a younger age, progress more quickly, be locally advanced, and have a higher chance of recurrence following surgery.¹ Prostate cancer is the most hereditary malignancy, with inherited genetic variables accounting for 58 % in prostate cancer risk.² There is a need to find possible modifiable variables, which might include a healthy lifestyle, for men who are at a greater risk of prostate cancer due to unmodifiable hereditary factors. A recent large-scale genome-wide association study (GWAS) found 269 germline risk variants that, when integrated into a polygenic risk score, highly predict prostate cancer risk (PRS). It is still unknown to what degree males with a high hereditary risk benefit from leading a healthy lifestyle.² The goal of this trial was to see if men with a high hereditary risk of prostate cancer, as characterised by a high PRS, might reduce their chance of overall or fatal prostate cancer by following a Healthy Lifestyle in two prospective studies.

Maintaining a healthy lifestyle may help to mitigate the hereditary risk of prostate cancer.

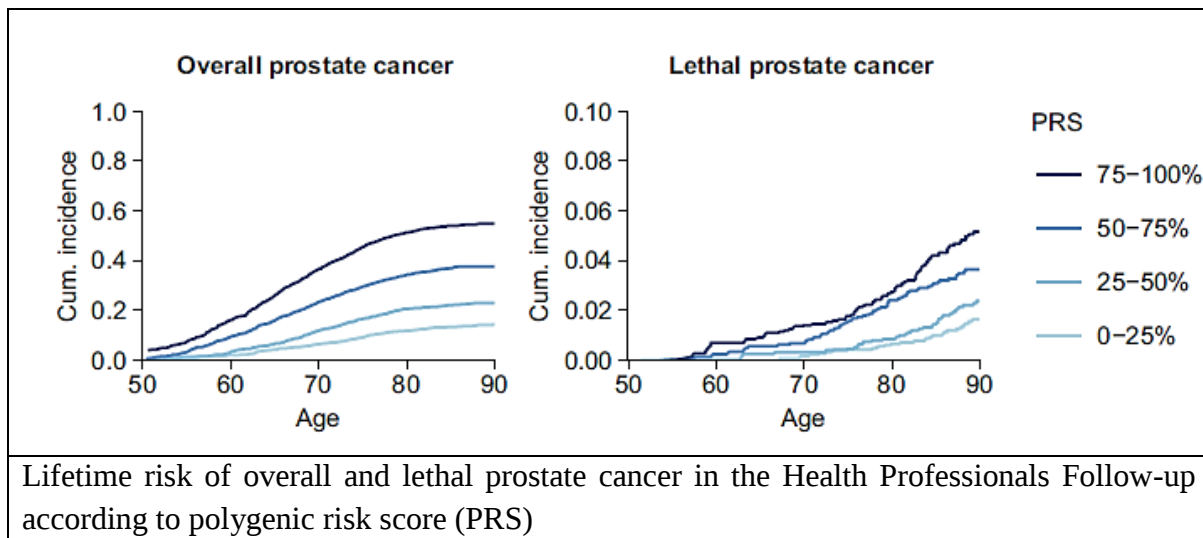
Methods:

Overall and fatal prostate cancer were the outcomes of interest. Medical records and pathology reports were reviewed to validate self-reported prostate cancer diagnosis. Questionnaires, medical records, autopsy reports, and searches of the National Death Index were used to determine metastatic illness and vital state. A physician endpoint review committee identified the underlying cause of death. The cancer incidence (>96%) and death (>99%) follow-up is nearly complete. Both alone and in combination, there is a link between PRS, healthy lifestyle score, and prostate cancer. The healthy lifestyle score was aggregated into three categories based on the number of events (0–2: unhealthy; 3: moderately healthy; and 4–6: healthy) or its individual components, and exposure groups were created based on a priori defined PRS quartiles and the healthy lifestyle score aggregated into three categories based on the number of events (0–2: unhealthy; 3: moderately healthy; and 4–6: healthy). Healthy weight, rigorous physical activity, not smoking, and a healthy diet were all used to characterise a healthy lifestyle. Time to event analyses were used to estimate hazard ratios (HRs) and lifetime risks for both overall and fatal prostate cancer occurrences.

Results:

During the follow-up period, 3005 cases of total prostate cancer and 435 cases of fatal prostate cancer were discovered. With a four-fold difference between males in the highest and lowest

quartiles (HR, 4.32; 95 % confidence interval [CI], 3.16– 5.89), the PRS permitted risk stratification not just for overall prostate cancer, but also for fatal disease. Following a healthy lifestyle was associated with a lower risk of lethal prostate cancer (HR, 0.55; 95% CI, 0.36– 0.86) among men in the highest PRS quartile, translating to a lifetime risk of 1.6 % (95 % CI, 0.8–3.1 %) among the healthy and 5.3 % (95 % CI, 3.6–7.8 %) among the unhealthy. Following a healthy lifestyle was not linked to a lower risk of prostate cancer in general.



Discussion:

According to this study based on two prospective cohort studies with follow-up, men with a high genetic risk who followed a healthy lifestyle had a 45% lower chance of deadly prostate cancer than those who did not.² According to this study, males who have the highest hereditary risk of prostate cancer gain the most from leading a healthy lifestyle. Men with a reduced genetic risk may benefit as well, although such changes may be harder to discern. As a result of the PRS's great discrimination of prostate cancer risk, many death occurrences occurred in the highest hereditary risk category. these results were in comparison with the existing literature.³

Conclusion:

The presence of a genetic predisposition for prostate cancer does not guarantee a bad prognosis. Men with a high PRS who followed a healthy lifestyle had a much decreased risk of mortality from prostate cancer.

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2. Plym et al. A Healthy Lifestyle in Men at Increased Genetic Risk for Prostate Cancer. *Eur Urol*. 2022 May 27:S0302-2838(22)02342-9.
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4. A Case of SARS-CoV-2-positive patient with renal artery thrombosis.

Introduction:

COVID-19 was discovered in Wuhan, China, in December 2019 and has already reached pandemic status. SARS-CoV-2, an enveloped beta coronavirus, is to blame. The interaction of inflammatory mediators, endothelial, microvascular, and maybe hepatic damage, as well as the virus's tissue tropism, results in a prothrombotic condition.¹ The most common thrombotic events in COVID-19 are venous thromboemboli (VTE), which are linked to increased disease severity and poor clinical outcomes. Endothelial inflammation, disruption of intercellular connections, and the development of microthrombi are all distinct microvascular anomalies in COVID-19.² COVID-19 pneumonia is linked to a coagulopathic condition, which raises the risk of thrombotic consequences.² Venous thrombosis events, pulmonary thrombosis, and myocardial infarction are the most prevalent thrombotic consequences presently. However, reports of embolization episodes in the renal arteries are uncommon, according to the researchers.³ here is a case of SARS-CoV-2-positive patient who developed renal artery thrombosis.

- **Patients with severe COVID-19 pneumonia are at increased risk of thrombosis.**
- **The elevated D-dimer was a risk factor for death in patients with SARS-CoV-2 infection**

Case Presentation:

A 62-year-old man with type 2 diabetes presented with a fever that had been persistent for 5 days. There was no cough, weariness, or stomach pain. The patient's body temperature was 36.7 °C at admission, and a reverse transcriptase-polymerase chain reaction (RT-PCR) assay revealed SARS-CoV-2 infection. Ground glass-like shadows and numerous consolidations were seen on a chest computed tomography scan in both upper lobes (Fig. 1 A to B). The coagulation function was normal in the first peripheral blood sample. There was no history of valvular heart disease, atrial fibrillation, or urinary tract illness in the patient. The ECG shows that the heart is in sinus rhythm. The creatinine concentration is 71 mol/L. The findings of the urine analysis are normal. The coronavirus pneumonia was classified as mild, and the patient was started on antiviral therapy. The patient had shortness of breath three days later, and the problem rapidly deteriorated. His physical condition improved significantly after a four-day prescription of methylprednisolone and ceftriaxone. The patient complained of abrupt onset acute discomfort in the left waist on day 12 of his stay. At the time, an abdominal and urinary colour doppler ultrasonography revealed no abnormalities. Two days later, laboratory testing revealed a considerably high d-dimer level of 1008 ng/ml, 116 umol/L creatinine, and 576 U/L LDH. Urine tests revealed occult blood 2 + and protein 2 + in the urine. The left renal artery

embolism and severe ischemia were discovered on an enhanced CT scan, which was identified as renal artery thrombosis, culminating in acute renal artery embolism. The patient had never been given anticoagulant medication previously. Because platelet activation and aggregation are involved in the process of renal artery thrombosis, clopidogrel antiplatelet aggregation

treatment and nadroparin calcium anticoagulant medication were used. Clopidogrel with rivaroxaban was taken as maintenance treatment three days later. After 1 week of anticoagulant treatment, the patient was discharged from the hospital with no lumbago,

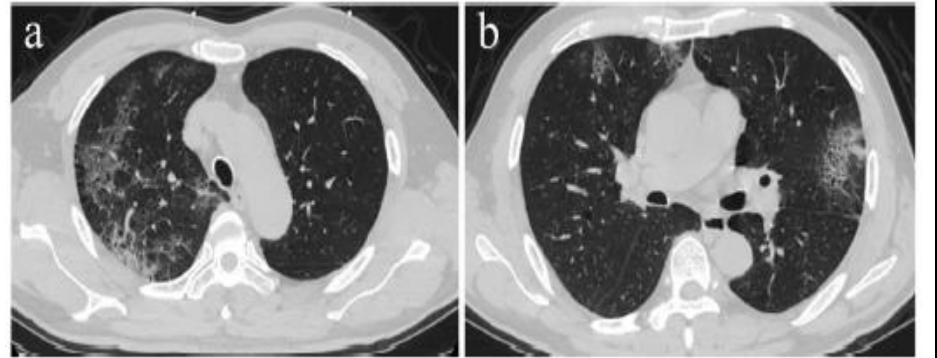


Fig. 1 Chest CT shows ground glass-like shadows and multiple consolidations in the right upper lobe

no lumbar percussion pain, normal D-dimer and renal function, and a regular urine pattern. The patient was then given the anticoagulant regimen for another three months. The patient returned to the hospital for a reexamination after 3 months, his renal function was normal.

Discussion:

Renal artery thrombosis developed unexpectedly after COVID-19 therapy in this patient, resulting in life-threatening ischemia in the left kidney. Elevated D-dimer was the laboratory test that revealed thrombotic complications. In patients with SARS-CoV-2 infection, having an increased D-dimer was a risk factor for mortality, especially in the elderly according to the previous studies.^{4,5}

Conclusion:

Due to the hypercoagulable condition, blood stasis, and endothelial damage, patients with severe COVID-19 pneumonia are at increased risk of thrombosis. Attention to be given towards thrombotic events resulting from hypercoagulation due to vascular endothelial damage. as this case shows, earlier anticoagulation can lower the likelihood of early problems.

References:

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3. Huang H, Lin C, Chen Y, Wu X, Lin M, Chen S, Li K. Renal artery thrombosis in SARS-CoV-2 infection: a case report. *BMC Nephrol.* 2022 May 6;23(1):175.
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