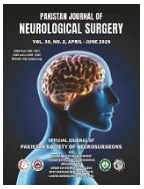

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Original Research

Neuropathic Pain Patterns in Patients with Ureteric Malignancies: A Clinical and Radiological Correlation

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ABSTRACT

Objective: To identify patterns of neuropathic pain in patients with ureteric malignancies and determine their association with radiological findings.

Methods: This prospective observational study was conducted at Lady Reading Hospital, Peshawar. A total of 188 patients with suspected or histopathologically confirmed ureteric malignancies were included. Detailed clinical assessments were performed to classify pain into localized flank pain, radiating neuropathic pain, dermatomal pain, and mixed patterns. Pain severity was measured using the Numeric Rating Scale. Radiological evaluation included contrast-enhanced CT urography or MRI to assess tumor location, ureteric obstruction, hydronephrosis, and peri-ureteric infiltration. The associations between neuropathic pain patterns and imaging findings were evaluated using the chi-square test.

Results: Radiating neuropathic pain was observed in 32.2% of patients, while 17.8% presented with dermatomal neuropathic pain. Distal ureteric tumors were the most common, frequently associated with hydronephrosis (62.7%). A significant association was found between neuropathic pain and radiological evidence of tumor infiltration ($p = 0.001$). Patients with advanced radiological features, particularly peri-ureteric invasion, were more likely to exhibit neuropathic pain characteristics.

Conclusion: Neuropathic pain is a prominent and clinically significant symptom in patients with ureteric malignancies and is strongly associated with radiological tumor invasion. Integrating clinical pain assessment with imaging findings can improve diagnostic accuracy and guide more appropriate management strategies, ultimately enhancing patient care outcomes.

Keywords: Ureteric malignancy, Neuropathic Pain, Urothelial Carcinoma, CT urography, Radiological Correlation.

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INTRODUCTION

Patterns of Neuropathic Pains in Ureteric Malignancy patients: Clinical and Radiological Relationship. Cancer-related pain is considered to be one of the most difficult phenomena in oncologic practice, and it has a strong impact on the quality of life of patients with the issue. Neuropathic pain is one of the various forms of cancer pain; it is a highly complicated clinical phenomenon since it is a result of direct damage or malfunction of the somatosensory nervous system. There are ways of neuropathic pain caused by tumor infiltration, compression of neural structures, inflammatory processes, or neural damage caused by treatment. Neuropathic pain can be presented in patients with malignancies of the urinary tract, particularly ureteric tumors, as flank pain, radiating abdominal pain, or as atypical symptoms of neuralgia that may resemble other diseases in patients. These patterns of pain need to be identified early on so as to make the correct diagnosis, perform the relevant imaging examination, and administer therapy promptly.[1]

Neuropathic pain is a relatively widespread condition among cancer patients, which has been reported in up to forty percent of cancer patients. It arises either by direct invasion of the tumor cells of nerves, displacement of adjacent neural pathways, or secondary inflammatory and ischemic alterations by tumor growth. Secondly, surgical, chemotherapy, and radiotherapy used to treat cancer can further impair peripheral nerves and worsen the neuropathic symptoms. Clinical manifestations may be mostly burning, shooting pain, tingling, numbness, or electric shock-like. These symptoms can appear periodically or be long-lasting and can severely affect the physical functionality, sleep patterns, and mental health.[2]

The prevalence of malignancies of the ureter is relatively low, and these represent a type of upper tract urothelial carcinoma. These cancers are of urothelial origin in the renal pelvis or ureter and constitute five to ten percent of the urothelial cancers. Ureteric tumors typically have no specific symptoms, such as hematuria, flank pain, urinary tract obstruction, etc. Due to the small lumen of the ureter, even minor lesions may develop obstruction, which results in hydronephrosis and the development of a progressive impairment of the kidney. Flank pain is thus among the most commonly reported effects of patients in this case, and it can be related to obstruction of the ureters or local tumor invasion.[3]

In developed cases of ureteric malignancies, the tumor can spread past the ureteric wall to include other retroperitoneal organs and neural plexuses. The ureter is closely positioned to various key neural pathways, such as the lumbar sympathetic, genitofemoral, and lumbosacral plexus. Intrusion or obstruction of these neural structures by a tumor may result in neuropathic pain patterns not common to normal visceral or nociceptive pain related to obstruction of the urinary tract. These neuropathic symptoms can be in the form of radiating pain to the groin, thigh, or lower abdomen and can have paresthesia or sensory changes along the affected dermatomes. Identification of these patterns may give significant hints on the disease spread and local tumor invasion.[4]

Radiological imaging is vital in the assessment of ureteric malignancies and complications of malignancies. Computed tomography (CT), magnetic resonance imaging (MRI), and CT urography are common modalities that are used in the detection of ureteric masses, evaluation of the extent of the tumor, identification of hydronephrosis, and detection of local invasion. Radiologic examination can reveal thickening of the ureter wall, filling defects, intraluminal masses, periureteric fills, or lymphadenopathy of the regions. Secondary effects of tumor growth may also be apparent on imaging, such as hydronephrosis, renal cortical thinness, or proximity of surrounding organs and neurovascular structures. These results are vital in diagnosis as well as staging, treatment planning, and disease progress monitoring.[5]

The relationship between clinical and radiological patterns of pain is of specific interest in situations when neuropathic symptoms are involved. As an example, the retroperitoneal nerves or paraspinal structures could be presented on the imaging as the tumor extension beyond the ureteric wall, peritoneal infiltration, or neural tracks compression. Radiological assessment can thus be used to clarify atypical pain presentation and direct clinicians towards the right pain management interventions. In addition, imaging has also been shown to distinguish between tumor-related neuropathic pain and other possible causes, including spinal pathology, renal colic, or musculoskeletal diseases.[6]

The neuropathic pain linked with ureteric malignancies is usually a mixed pain syndrome wherein the co-existence of neuropathic and nociceptive systems occurs. When tumors obstruct the ureters, they are likely to cause visceral pain, and direct neural affection can result in neuropathic pain. Such overlap can make clinical evaluation difficult, and it could be slow in diagnosis in case of misinterpretation of the neuropathic symptoms with other seemingly unrelated neurological disorders. An in-depth examination of pain that is based on clinical assessment, neurological examination, and in-depth imaging is thus critical in identifying the underlying mechanism of pain.[7]

Over the past few years, the issue of multidisciplinary management of cancer-related neuropathic pain has gained increased focus on the significance of the problem. Early detection of neuropathic elements of pain enables clinicians to implement the right therapeutic interventions, such as adjuvant analgesics, anticonvulsants, antidepressants, and specialized oncologic therapies. Not only does the management of neuropathic pain help in improving the comfort of the patient, but it also helps in increasing the overall treatment adherence and quality of life.[8]

Although neuropathic pain is clinically relevant as indicated in malignancies of the urological system, little research has specifically focused on the patterns of neuropathic pain in patients with ureteric cancers and how these are related to radiological data. The majority of available literature is dedicated to the general neuropathic pain related to cancer or the pain related to other urological cancers, like bladder or prostate cancer. Because of it, the clinical characteristics and imaging peculiarities of the neuropathic pain in tumors of the ureters are not adequately characterized.[9]

Knowledge of the correlation between clinical patterns of neuropathic pain and radiological appearances of ureteric malignancies could enhance the diagnostic quality and assist in identifying those with an advanced localized disease or an invasive disease. This kind of correlation might also allow detecting the neural involvement earlier and helping to shape the individual treatment approach. Thus, exploring the manifestations of neuropathic pain in individuals with ureteric malignancies and comparing the results of this study with the imaging characteristics is a significant topic in clinical studies of uro-oncology and radiology.

Importantly, recognition of neuropathic pain patterns in patients with ureteric malignancies may have significant implications for surgical planning and overall management strategy. The presence of radiating or dermatomal neuropathic pain can suggest possible peri-ureteric or retroperitoneal neural involvement, which may indicate locally advanced disease. This can assist clinicians in preoperative staging, guide the extent of surgical resection, and help anticipate the need for more extensive procedures such as en bloc resection or lymphadenectomy. Therefore, correlating neuropathic pain characteristics with radiological findings may contribute to more accurate disease assessment and improved individualized treatment planning.

MATERIALS AND METHODS

Study Design and Setting

The research was done as a prospective observational study in the Department of Urology and Radiology of Lady Reading Hospital, Peshawar, Pakistan. Lady Reading Hospital is a tertiary care hospital with one of the biggest populations in Peshawar and the neighboring districts of Khyber Pakhtunkhwa. The research was conducted between 2 February 2025 and 2 November 2025, a period of 9 months. The aim of conducting the study was to assess the patterns of neuropathic pain in patients diagnosed with ureteric malignancies and how these patterns relate to the radiological results.

Sample Size and Sampling Technique

The study involved 118 patients with known or suspected ureteric malignancies through the use of a consecutive non-probability sampling method. Inclusion was done for all eligible patients who presented themselves to the urology or oncology clinics within the period of study. The sample size was calculated according to the number of patients flowing into the hospital and the anticipated occurrence of ureteric malignancies that will present with the symptom of pain in a tertiary care hospital.

Inclusion Criteria

The patients were incorporated in the research based on the following criteria: Patients aged 18 years or above. Patients with radiologically or histopathologically proven ureteric malignancy. Patients who have a complaint of flank pain, abdominal pain, or neuropathic-type pain symptoms that include burning sensation, radiating pain, tingling, or numbness. Those patients who had undergone a contrast-enhanced CT scan or MRI to assess ureteric pathology.

Exclusion Criteria

The patients excluded from the study were the following: Patients with non-malignant ureteric strictures or ureteric calculi. Patients who have a history of spinal or neurological disorders may experience neuropathic pain on their own. Patients who have diabetic neuropathy or peripheral neuropathy as a result of other systemic conditions. Patients who did not consent to take part in the study.

Clinical Evaluation

A detailed clinical assessment of all patients was performed at presentation. Demographic data, including age, gender, duration of symptoms, and relevant medical history, were recorded. Pain characteristics were carefully evaluated and classified according to neuropathic features, including burning pain, electric shock-like sensations, shooting pain, and associated sensory disturbances.

Pain severity was assessed using the Numeric Rating Scale (NRS), ranging from 0, indicating no pain, to 10, indicating the worst possible pain. A focused neurological examination was performed to identify sensory deficits, dermatomal distribution of pain, and any associated motor weakness.

Neuropathic pain was categorized based on clinical features and anatomical distribution of symptoms. Patients were classified into different patterns, including localized flank pain without neuropathic features, radiating neuropathic pain to the groin or thigh, dermatomal neuropathic pain suggestive of nerve involvement, and mixed visceral and neuropathic pain patterns. This classification was based on detailed clinical evaluation and neurological examination. The association between these pain patterns and radiological findings such as tumor spread, neural compression, or retroperitoneal infiltration was subsequently analyzed.

Although pain assessment was primarily based on clinical evaluation, neurological examination, and NRS scoring, validated neuropathic pain assessment tools such as DN4 or LANSS were not routinely applied in the study setting.

Radiological Evaluation

Imaging assessment of all patients was performed using contrast-enhanced computed tomography (CT) urography or magnetic resonance imaging (MRI), depending on clinical indication and availability. Multidetector CT urography was performed using a standard protocol that included non-contrast, arterial, nephrographic, and delayed excretory phases. Radiological evaluation focused on ureteric mass or wall thickening, tumor location in the upper, middle, or distal ureter, degree of ureteric obstruction and hydronephrosis, evidence of periureteric infiltration, involvement of adjacent retroperitoneal or neural structures, and regional lymph node enlargement or distant metastasis. All imaging studies were independently reviewed by two experienced radiologists who were blinded to the clinical pain classification to reduce observer bias.

Data Collection Procedure

Clinical and radiological data were recorded on a structured pro forma designed for the study. Information collected included patient demographics, pain characteristics, imaging findings, tumor localization, and disease staging. All data were systematically entered into a computerized database for analysis.

Statistical Analysis

Statistical software, Statistical Package for Social Sciences (SPSS) version 26.0, was used to perform statistical analysis. Mean and standard deviation were used to display continuous variables, including age and pain scores. Gender distribution, tumor location, and pain pattern were categorical variables that were represented in terms of frequencies and percentages.

The relationship between the patterns of neuropathic pain and radiological observation was compared with the Chi-square test. A p-value of under 0.05 was deemed to be significant.

Ethical Considerations

The Institutional Review Board of Lady Reading Hospital, Peshawar, gave ethical approval (IRB: Referencenumber:262/LRH/MTI) of the study before the commencement of the research itself. The ethical standards of human research were adhered to in all the procedures. Informed consent (written) was taken from all the patients before they could participate in the study. Clear patient confidentiality and anonymity were observed during the research.

RESULTS

Demographic Descriptions of the Population of the Study

This study involved 118 patients who had radiologically or histopathologically confirmed ureteric malignancies and was carried out in Lady Reading Hospital, Peshawar, between 2 February 2025 and 2 November 2025. The average age of the patients was 56.3° Cw 12.7 years, 28-82 years. The highest number of cases was in the age group of 5070 years, and it constituted the majority of the patients.

It affected male patients more than female

Table 1: *Age Distribution of Patients (n = 118).*

Age Group (Years)	Frequency	Percentage
18 – 30	6	5.1%
31 – 40	12	10.2%
41 – 50	26	22.0%
51 – 60	34	28.8%
61 – 70	28	23.7%
> 70	12	10.2%

patients. Among the number of people who were involved, there were 72 male patients (61.0%) and 46 female patients (39.0%), which is a clear indication of a male dominance of the people involved in the cases of ureteric malignancies.

Table 2: *Gender Distribution of Patients (n = 118).*

Gender	Frequency	Percentage
Male	72	61.0%
Female	46	39.0%

Table 1 shows that ureteric malignancies were the most prevalent among patients aged 51-60 years, and then aged 61-70 years, which is a positive result of the high incidence of urothelial tumors in elderly people.

Table 3: *Distribution of Pain Patterns in Patients (n = 118).*

Pain Pattern	Frequency	Percentage
Localized flank pain	29	24.6%
Radiating neuropathic pain to the groin/thigh	38	32.2%
Dermatomal neuropathic pain	21	17.8%
Mixed visceral and neuropathic pain	30	25.4%

Gender Distribution

Table 2 summarizes the gender of the study participants. The study population was made up of male a higher percentage than females. This observation is in line with prior research, which has shown that the prevalence of urothelial malignancies is greater in men.

Table 2 shows that males were almost two-thirds of the total cases. The reason behind this trend could be the increased exposure to environmental risk factors, including smoking and exposure to chemicals in their occupations.

Patterns of Clinical Pain in Patients

One of the most frequent symptoms of patients with ureteric malignancies had to do with pain. The records on various patterns of pain were made according to clinical evaluation and neuropathic traits. Radiating flank pain was the most common symptom which was observed, then mixed and neuropathic pain.

As demonstrated in Table 3, radiating neuropathic pain involving the groin or upper thigh was the most common pain pattern, affecting 32.2% of patients. Dermatomal neuropathic pain suggestive of nerve involvement was observed in 17.8% of cases.

Radiological Characteristics of Ureteric Malignancies

Radiological evaluation was performed using contrast-enhanced CT urography or MRI. Imaging findings included tumor location within the ureter, degree of obstruction, and evidence of local infiltration.

Table 4: *Radiological Findings in Patients with Ureteric Malignancies (n = 118).*

Radiological Finding	Frequency	Percentage
Upper ureter tumor	32	27.1%
Mid ureter tumor	25	21.2%
Distal ureter tumor	61	51.7%
Hydronephrosis	74	62.7%
Peri-ureteric infiltration	42	35.6%
Regional lymphadenopathy	28	23.7%

The findings in Table 4 show that distal ureteric tumors were the most common, accounting for 51.7% of cases. Hydronephrosis was present in nearly two-thirds of patients due to ureteric obstruction caused by tumor growth.

Association Between Neuropathic Pain Pattern and Radiological Findings

A statistical analysis was performed to determine

the relationship between neuropathic pain patterns and radiological evidence of peri-ureteric infiltration or neural involvement.

Table 5 statistical analysis has shown that neuropathic pain and radiological tumor-infiltration have a significant relationship. The neuropathic pain patients had a very high chance of presenting with the extension or inclusion of adjacent neural structures in and around the ureters in imaging. The p-value of 0.001 shows that this association was significant.

Table 5: *Association Between Neuropathic Pain and Radiological Tumor Infiltration.*

Pain Pattern	Tumor Infiltration Present	Tumor Infiltration Absent	Total
Neuropathic pain present	34	25	59
Neuropathic pain absent	8	51	59

Chi-square test = 21.47, p-value = 0.001

Summary of Results

The results of the present paper prove that neuropathic pain patterns are not particularly rare in individuals who have ureteric malignancies and can indicate underlying neural involvement through tumor infiltration. Radiological imaging is critical to detecting these structural changes and mapping them to clinical pain patterns. The importance of clinical assessment and imaging assessment lies in the significant relationship between neuropathic pain and radiological tumor infiltration and radiological tumor infiltration, which leads to enhanced diagnostic precision and management planning.

DISCUSSION

Neuropathic pain is a complicated clinical presentation in patients with malignancies since it occurs as a result of injury or dysfunction of the somatosensory nervous system. The occurrence of neuropathic pain is generally associated with the tumor infiltration or compression of the neighboring structures of the nervous system in the retroperitoneal area in patients with ureteric malignancies.[10] In the current research, the pattern of neuropathic pain in patients with ureteric malignancies was evaluated, and the association between neuropathic pain and radiological results was investigated. These findings showed that neuropathic pain symptoms were comparatively common, with significant correlation with radiological signs of peri-ureteric infiltration and local tumor spread.[11]

The demographics of the study population proved that ureteric malignancies were more prevalent in the middle-aged and older patients at a mean age of about fifty-six years. Most of the patients were aged fifty to seventy years. This observation is in line with already reported epidemiological trends of upper urinary tract urothelial carcinoma, in which the incidence is rising with aging.[12] It is assumed that degenerative changes of the cell and prolonged exposure to carcinogenic agents like tobacco smoke, environmental toxins, etc., are some of the factors that contribute to the occurrence of urothelial malignancies in geriatric populations. The same results have been cited in various international studies that have also proved the highest occurrence of ureteric tumors in both the sixth and seventh decades of life.[13]

In the current study, the gender distribution was characterized by a high degree of male dominance since the percentage of male patients was about sixty percent. This trend has been largely outlined in earlier studies on the urothelial cancer of the upper urinary tract. It is suggested that the increased prevalence of men is due to increased exposure to risk factors such as smoking, occupational chemical exposure, and long-term inflammatory diseases of the urinary tract. Also, lifestyle-related elements such as tobacco use

have been closely linked to the development of urothelial tumors and may be the cause of the gender difference in several clinical trials.[14]

One of the crucial presenting symptoms in ureteric malignancies is pain. But again, the pain can be of different types based on the mechanism by which the pain is caused. In most patients, obstruction of the ureters leads to visceral or colicky pain like renal colic. Contrastingly, neuropathic pain occurs when the tumor infiltrates neighboring nerves or neural plexuses. Several different pain patterns were detected in the current study, such as localized flank pains that radiated to neuropathic pain, dermatomal neuropathic pain, and mixed visceral neuropathic pain. The most typical pattern was radiating neuropathic pain to the groin or the thigh. This dystrophy represents the anatomical correlation between the ureter and the surrounding neural paths, like the genitofemoral nerve and lumbar plexus.[15]

The occurrence of dermatomal neuropathic pain in some of the patients implies a direct implication of nerve roots or peripheral nerves in the retroperitoneal area. Patients may complain of such pain as burning, shooting, or electric-shock-like pain and may have sensory disturbances, including tingling or numbness. These symptoms suggest participation of somatic sensory pathways, and not just visceral nociceptive systems. Early detection of the neuropathic pain elements is medically significant since the effects can be sensitive to certain analgesic measures like anticonvulsants or antidepressant medication, in contrast to the traditional opioid treatment.[16]

Radiological imaging was seen to have significant importance in assessing ureteric malignancies in this research. Computed tomography urography with contrast enhancement and magnetic resonance imaging were used to allow a detailed image of the location of ureteric masses, tumors, and other complications, including hydronephrosis and infiltration of the peri-ureteric environment. The imaging showed distal ureteric tumors as the most frequent and upper and mid ureteric lesions as the next most prevalent in the current cohort. This has been observed to be comparable to other works that have reported that distal ureteric involvement is relatively common as a result of anatomical and functional issues relating to urinary flow and urothelial carcinogen exposure.[17]

A high percentage of patients had hydronephrosis, which is another common radiological presentation of ureteric obstruction. The result of chronic obstruction includes the dilation of the renal pelvis and calyces, which could ultimately lead to the loss of renal cortex and loss of functions. Moreover, peri-ureteric infiltration was also detected in a considerable proportion of patients, during which the local disease is advanced. The spread of the tumor outside the ureteric wall can involve some of the surrounding retroperitoneal structures, such as nerves, lymphatic channels, and blood vessels. This intrusion can be the reason behind the presence of neuropathic pain symptoms that are present in the clinical assessment.[18]

The statistically significant correlation between the patterns of neuropathic pain and the radiological signs of tumor infiltration was observed to be one of the most significant results of the current study. Patients reporting neuropathic pain were also much more likely to display imaging characteristics that were indicative of peri-ureteric extension or adjacent neural involvement. This finding confirms the idea that neuropathic pain in ureteric tumors is frequently a result of direct tumor invasion or neural pathway compression. Other malignancies, such as pancreatic cancer, prostate cancer, and retroperitoneal tumors, have also been described to have similar relationships between neuropathic pain and tumor infiltration.[19]

The ureter, due to its anatomical position, lies very close to various significant neural structures such as the lumbar sympathetic chain, the genitofemoral nerve, and the lumbosacral plexus

branch. This area can grow into tumors that can result in mechanical compression, inflammatory irritation, or directly invade these nerves, causing neuropathic pain. Such involvement can only be radiologically identified to identify the involvement, but also to interpret the clinical symptoms that the patients experience.[20]

The association between the clinical pattern of pain and imaging results has significant consequences for diagnostic assessment. Those patients who present with unusual symptoms of neuropathic pain, including dermatomal distribution of radiations of the groin or sensory aspects, should receive good radiological examination to exclude malignancy or highly developed tumor spread. In most instances, these symptoms can be initially thought to be musculoskeletal disorders, spinal pathology, or peripheral neuropathy, which will slow down the diagnosis of ureteric cancer. Clinical examination with specific imaging would thus enhance early identification and inform the right management measures. One more significant point, which this research has mentioned, is the importance of multidisciplinary cooperation in the process of treating neuropathic pain that is associated with cancer. Often, effective treatment is done after combining oncologic therapy, radiological monitoring, and specific pain management strategies. Neuropathic pain is commonly unresponsive to standard analgesics as the initial option and might need the administration of adjuvant drugs like gabapentinoids, tricyclic antidepressants, or serotonin norepinephrine reuptake inhibitors. Along with this, interventional pain management methods can be regarded in chosen situations where the extreme neuropathic symptoms can still be observed despite medical treatment.[21]

Radiologically, early detection of peri-ureteric infiltration and neural involvement may also have an impact on treatment planning. Patients whose extension of local tumor is evident might require a more vigorous surgical intervention, systemic chemotherapy, or radiotherapy based on the level of stage of the disease. Correct imaging diagnosis thus plays a part in the prognostic analysis as well as in the treatment decisions.[22]

Some limitations should also be considered in the interpretation of the findings of this study. The research was performed in one tertiary care facility, and the sample size was rather moderate. Though consecutive sampling was adopted, the patient population might not be representative of all people with ureteric malignancies in the general population. More so, the application of evaluation of neuropathic pain depended more on clinical examination as opposed to specialized neurophysiological examination. Future research studies that are conducted using bigger multicenter cohorts and related sophisticated diagnostic instruments could also give more information on the mechanism and clinical implications of neuropathic pain in ureteric cancers.

Despite these limitations, the current study has provided useful information about the clinical and radiological correlation of neuropathic pain in patients who have ureteric malignancies. The findings demonstrate the significance of identifying neuropathic pain patterns as possible signs of tumor invasion or neural engagement. A combination of a cautious clinical examination and a sophisticated imaging approach can enhance the diagnostic accuracy and help identify complicated pain syndromes in urothelial tumors early.

Neuropathic pain patterns combined with radiological evidence of peri-ureteric infiltration may indicate locally advanced disease with possible involvement of adjacent retroperitoneal neural structures. This has important surgical implications as it may suggest a reduced likelihood of complete resectability and may necessitate wider surgical excision or extended resection beyond standard ureterectomy. Such findings may also influence preoperative planning and selection of patients for multimodal treatment strategies.

LIMITATIONS

This study has certain limitations that should be considered when interpreting the results. The sample size was relatively small and derived from a single tertiary care center, which may limit the generalizability of the findings. In addition, the assessment of neuropathic pain was based on clinical evaluation and the Numeric Rating Scale (NRS) without the use of validated neuropathic pain assessment tools such as DN4 or LANSS, which may have provided a more objective measurement. Furthermore, complete correlation with tumor staging and histopathological subtypes was not systematically analyzed in all cases due to variability in available clinical and radiological records. Despite these limitations, the study provides useful preliminary evidence regarding the association between neuropathic pain patterns and radiological findings in ureteric malignancies.

CONCLUSION

Neuropathic pain is a significant clinical manifestation in patients with ureteric malignancies and is frequently associated with radiological evidence of peri-ureteric infiltration and locally advanced disease. Beyond a simple clinical correlation, these pain patterns may serve as an important indicator of underlying tumor aggressiveness and possible neural involvement. Recognition of neuropathic pain features in combination with imaging findings can assist in earlier identification of advanced disease, improve diagnostic accuracy, and contribute to more informed surgical and therapeutic decision-making. Therefore, integrating clinical pain assessment with radiological evaluation may enhance staging accuracy and optimize individualized patient management in ureteric malignancies.

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AUTHORS CONTRIBUTIONS

Serial Number	Author's Full Name	Intellectual Contribution to the Paper in Terms of
1.	Muhammad Ilyas	Study design and methodology.
2.	Muhammad Seerwan	Analysis of data and interpretation of results.
3.	Subash Khataumal	Paper writing.
4.	Hafeez ur Rahman	Data collection and calculations.
5.	Abdul Qahar	Analysis of data and interpretation of results.