



Original Article

Paraneoplastic syndrome of renal cell carcinoma in Phramongkutklao Hospital.

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Abstract

Objective: To study the prevalence of paraneoplastic syndromes in patients with renal cell carcinoma (RCC) and the association between paraneoplastic syndromes and RCC staging.

Material and Method: This retrospective study analyzed 205 patients with RCC in Phramongkutklao Hospital from 2007-2017. These data consist of paraneoplastic syndrome parameters and pathologic staging.

Result: One hundred nineteen (58%) RCC patients were in the asymptomatic group and 86 (42%) RCC patients were in the symptomatic group. The prevalence of paraneoplastic syndromes was 24.4% (elevated ESR 16.6%, hypertension 13.2%, anemia 12.2%, weight loss 10.7%, pyrexia 9.3%, abnormal liver function 12.7%, hypercalcemia 2.9% and polycythemia 0.97%). Symptomatic patients had significantly more paraneoplastic syndromes (odds ratio=11.13) and a higher stage ($p<0.001$).

Conclusion: The prevalence of paraneoplastic syndrome was found in 24.4% of patients with RCC, and elevated ESR was the most common parameter. Symptomatic patients had more paraneoplastic syndromes and a higher stage of RCC.

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Introduction

Renal cell carcinoma is the third most common genitourinary tumor, accounting for 1.6 cases/100,000 population in Thailand. Traditionally the diagnosis of renal cell carcinoma has been made after the investigation of any or all of the classic triad of symptoms characterizing this malignancy, including flank pain, palpable mass and hematuria. However, with the advent and mainstream use of abdominal computerized tomography (CT) and ultrasound, the incidental detection of renal cell carcinoma in asymptomatic patients has increased.

This increased proportion of incidental cases of renal cell carcinoma has led many to investigate whether the detection of these tumors before symptom onset has any clinical significance. Early studies demonstrated that incidentally discovered renal cell carcinoma tends to be smaller and lower stage, resulting in better survival outcomes than RCC detected in symptomatic patients. Such encouraging data had led to the belief that incidentally discovered renal cell carcinoma has a better prognosis, and even subsequently inspired many to consider routine ultrasound screening of the general population.

Renal cell carcinomawas previously referred to as the internist's tumor because of the predominance of systemic rather than local manifestation. Paraneoplastic syndromes are found in 20% of patients with renal cell carcinoma. Many studies have shown an association between paraneoplastic syndromes and RCC in a number of aspects, such as overall survival, aggressiveness, and metastasis. For these reasons, studying paraneoplastic syndromes may be beneficial for detecting renal cell carcinoma.

Material and Method

After obtaining Institutional Review Board (IRB) approval, a retrospective review was performed of all the patients with RCC who underwent radical or partial nephrectomy between 2007 and 2017 in Phramongkutkla Hospital.

Two hundred and five patients were identified according to the inclusion criteria. Preoperative and postoperative data were collected from medical records and include demographic data, pathologic stage, and paraneoplastic syndrome parameters (ESR, blood pressure, hemotocrit, weight less, pyrexia, liver function).

All data were analyzed using descriptive statistics for the demographic data and prevalence of paraneoplastic syndrome in Phramongkutkla Hospital. The chi-square test was used to find the association between paraneoplastic syndrome and stage of RCC.

Result

Two hundred five patients underwent radical or partial nephrectomy with pathologically confirmed RCC; 119 (58%) RCC patients were in the asymptomatic group and 86 (42%) RCC patients were in the symptomatic group. The most common symptoms leading to a diagnosis of RCC were hematuria 18.5%, weight loss 8.8%, and palpable mass7.3%. Stage of RCC was divided into 4 groups: stage I45.4%, stage II 14.6%, stage III 37.1%, and stage IV2.9%.

The prevalence of paraneoplastic syndromes was 24.4% (elevated ESR 16.6%, hypertension 13.2%, anemia 12.2%, weight loss 10.7%, pyrexia 9.3%, abnormal liver function 12.7%, hypercalcemia 2.9% and polycythemia 0.97%). Symptomatic patients had significantly more paraneoplastic syndromes (odds ratio=11.13) and a higher stage ($p<0.001$).

Discussion

Prevalence of paraneoplastic syndromes in our study was similar to other studies. However, in our study abnormal liver function was higher than in other studies. Gold PJ reported a prevalence of abnormal liver function in paraneoplastic syndromes of 14.4%.In our study it was 42%. The reason that abnormal LFT in our study was higher may be because elevated alkaline phosphatase can be



elevated not only in cancer patients with liver or bone metastasis but also in patients with kidney, lung, ovary, colon, adrenal, breast, uterus or cervix cancer. Our study did not exclude these comorbidities or preexisting cancer.

In our study, paraneoplastic syndromes were found to be higher in symptomatic patients with a higher stage of renal cell carcinoma. Thus, we think that paraneoplastic parameters are not suitable for screening for renal cell carcinoma. Paraneoplastic syndromes should be a clue for finding causes of abnormality and a prognostic factor for overall survival. It was reported by Daniel Moreira that patients with renal cell carcinoma undergoing nephrectomy presenting with a paraneoplastic syndrome had a worse oncologic outcome than those with incidentally found tumors.

To our knowledge this is the first report in Thailand about the prevalence of paraneoplastic syndromes in patients with renal cell carcinoma. This study has several limitations. First, it was a retrospective single center study and therefore some crucial clinical details were not available for analysis. Second, we could not study about neuromyopathy and amyloidosis due to the small number of cases found in the medical records.

Conclusion

We demonstrated that the prevalence of paraneoplastic syndrome in patients with RCC in Phramongkutklao Hospital was 24.4%. Elevated ESR was the most common parameter in paraneoplastic syndromes. Symptomatic patients had more paraneoplastic syndromes and a higher stage of RCC.

Table 1. Presenting symptoms for diagnosis of RCC.

Symptoms	N (%)
Incidental finding	119 (58)
Hematuria	38 (18.5)
Pain	12 (5.9)
Palpable mass	15 (7.3)
Weight loss	18 (8.8)
Varicocele	3 (1.5)

Table 2. Prevalence of each paraneoplastic parameter.

Parameters	N (%)	Percentage in paraneoplastic group
Elevated ESR	30 (16.6)	60%
Hypertension	23 (13.2)	46%
Abnormal liver function	21 (12.7)	42%
Anemia	19 (12.2)	38%
Cachexia, Weight loss	15 (10.7)	30%
Pyrexia	12 (9.3)	24%
Hypercalcemia	6 (2.9)	12%
Polycythemia	2 (0.97)	4%

**Table 3.** Association between factors and paraneoplastic syndromes.

Variable	Paraneoplastic group N (%)	Non-Paraneoplastic group N (%)	P value
Age (yr)			
Mean \pm SD	66.14 \pm 10.84	61.01 \pm 13.73	0.017
Gender			0.831
Male	35 (70)	106 (68.4)	
Female	15 (30)	49 (31.6)	
Size	9.71 \pm 3.04	5.73 \pm 3.42	<0.001
Stage of RCC			<0.001
1	0 (0)	93 (60)	
2	8 (16)	22 (14.2)	
3	36 (72)	40 (25.8)	
4	6 (12)	0 (0)	
Dx by			< 0.001
Incidental finding	9 (18)	110 (71)	
Symptomatic group	41 (72)	45 (29)	

Table 4. Association between symptomatic group and paraneoplastic syndromes.

Variable	Adjusted Odd ratio 95% CI (min to max)	P-value
Incidental group	11.14 (5.01 to 24.79)	<0.001
Symptomatic group		

Conflict of Interest

There is no conflict of interest regarding the publication of this paper.

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