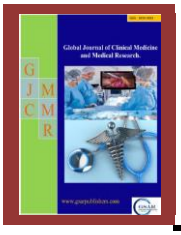

Global Journal of Clinical Medicine and Medical Research [GJCMMR]
ISSN: 2583-987X (Online)
Abbreviated key title: Glob.J.Clinic.Medici.Medica.Res.
Frequency: Monthly
Published By GSAR Publishers
Journal Homepage Link- https://gsarpublishers.com/journal-gjcmmr-home/

Metastatic Renal cell carcinoma in 18-year-old female.

By

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Article History

Received: 20/08/2025
Accepted: 28/08/2025
Published: 30/08/2025

Vol – 3 Issue – 8

PP: -01-02

Abstract

Renal cell carcinoma (RCC) is the most common type of kidney cancer, accounting for 85-90% of malignant kidney tumors in adults and 2-3% of all adult tumors, making it a rare occurrence. RCC primarily arises from renal tubular epithelial cells.It is most frequently diagnosed in individuals aged 50-70, with its incidence increasing with age. RCC is extremely rare in individuals under 20, accounting for only 0.1-0.3% of pediatric tumors. RCC in younger patients may also be Environmental exposure as a risk factor for RCC primarily relates to certain chemicals and occupational hazards. Environmental exposure risk factors that have been associated with RCC are tobacco smoking, chemical exposures like benzene and asbestos, heavy metals like cadmium and lead, petroleum products, radiation exposure, obesity and hypertension. Associated with them are hereditary syndromes like von Hippel-Lindau disease, Birt-Hogg-Dubé syndrome and hereditary leiomyomatosis, which can influence its clinical presentation and outcomes. Further studies in future for environmental factors in this geographic region could be done if more teenage renal cancer cases appear in vicinities of oil excavation.

Keywords: *Kidney cancer, RCC in younger patients, Benzene, Petroleum Products, RCC in younger individuals.*

Introduction

Renal cell carcinoma (RCC) is a heterogeneous group of cancers arising from renal tubular epithelial cells that encompass 85% of all primary renal neoplasms [1] . Renal cell carcinoma (RCC)is the most common kidney cancer accounting for about 8590 % of all malignant kidney tumors in adults and about 2-3% of all adult tumors which makes it a rare tumor [2]. The most common subtypes of RCC are clear cell RCC (ccRCC) 75%, papillary RCC10-15%, and chromophobe RCC 5%[2,3]. Renal cell carcinoma is most commonly diagnosed in individuals between the ages of 50-70 [4]. The likelihood of RCC increases with age. RCC is extremely rare under the age of twenty, where it accounts (0.1-0.3) % of all pediatric tumors[5] and approximately 2% of all pediatric renal tumors[6].In young adult RCC present differently compared to older populations and it may be asymptomatic in its early stages , symptoms includes flank pain, hematuria ,palpable mass , weight loss , fatigue ,fever [6,7] In some cases, RCC in young adults can be detected incidentally during imaging for other reasons such as ultrasound or Ct-scan[8].Compared to older adults, RCC in younger individuals may be associated with hereditary syndromes like Von Hippel-Lindau (VHL) disease with a deletion in the VHL gene von Hippel-Lindau tumor suppressor gene [9,10], Birt-Hogg-Dubé syndrome due to mutations in Folliculin gene[9] , or hereditary leiomyomatosis and renal cell cancer (HLRCC)due to mutations in the fumarate hydratase (FH) gene[11], which could influence both the clinical presentation and outcomes[12]. Environmental exposure as a risk factor for RCC primarily relates to certain chemicals and occupational hazards. Environmental exposure to risk factors that have been associated with RCC are tobacco smoking, obesity, and hypertension[13]. Chemical Exposures like benzene, and asbestos, heavy metals like cadmium and lead, Petroleum Products and Radiation Exposure[14] .

Case description:

18 years old female patient presented with left flank colicky pain for three days duration increasing in severity with time, not radiating to any other site. Hematuria, dysuria, difficulty in urination, fever, and weight loss were absent. Changes in bowel habit or stool color, vomiting, change in skin color or any skin rash, abdominal distension were absent as well.

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Abdominal ultrasound was done and it showed a left renal central mass of 3cm x 3cm x 2.5 cm and multiple cystic lesions in the liver abdominal. Ct scan showed left renal mass with high suspicion of RCC and metastatic cystic lesion in the liver the largest was 6.5cm x5cm x7.5 cm on Rt. hepatic lobe. The patient was sent for left radical nephrectomy and a biopsy showed two foci of papillary renal cell carcinoma, with a large liver metastasis with cystic necrosis and few enhanced mesenteric lymph nodes. After the nephrectomy the patient complained of left periorbital edema, redness, and blurry vision. She was sent for a brain MRI which showed a solitary complex solid secondary metastatic deposit involving the left lacrimal gland measuring 35mm x 32mm x 30 mm in maximum diameter. Adjacent eye globe was intact. Physical examination revealed left trans peritoneal scar. She had no inflammatory skin changes, organomegally, lymphadenopathy, skin changes or abdominal distention. Patient was advised to start Sunitinib.

Conclusion

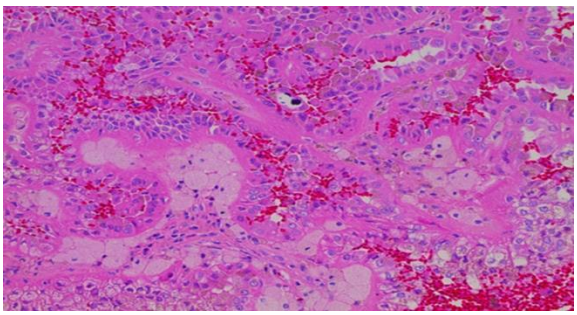
Papillary RCC presenting in teen age may be genetically predisposed in VHL,Birt-Hogg-Dubé , hereditary leiomyomatosis syndromes with various genetic mutations, but the presence of environmental factors may also have a similar effect especially in areas of high environmental pollution due to oil exploration. Having similar cases from the same or similar geographical areas in future will need further studies in this field.

Disclosure

This study was conducted at Al-Thaqalyn Hospital cancer institute, Basrah, Iraq.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.



Histology

1. **Human Rights Statement:**

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of [Al Thaqalayn Cancer Hospita], [Basra, IRAQ] (protocol code: [CS], approved on [15/10/24]).

2. **Funding Statement:**

NO FUNDING WAS RECEIVED FOR THE PROJECT

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