Research Article

Updates In Renal Cell Carcinoma

Wafaa M. Abd El-Latif, Amani S. Guirguis , Hoda M. Abd El-Azeam and Salma M. Ahmed El-Saeed
Department of Oncology, El-Minia Faculty of Medicine

Introduction

Renal Cell Carcinoma (RCC) is the most common solid lesion within the kidney and accounts for approximately 90% of all kidney malignancies. (Siegel et al., 2016). RCC represents 2–3% of all cancers, and it is now the 7th leading cancer type in men in the U.S. & there is a 1.5:1 predominance in men over women, with peak incidence occurring between 60 and 70 year of age. (Siegel et al., 2016). The etiology of most RCCs remains unclear, Approximately 2–4% of RCC is hereditary, but the risk factors for RCC include lifestyle variables such as smoking, obesity, hypertension and individuals at an advanced stage of chronic kidney disease on long-term dialysis are also at high risk for RCC. (Breda et al., 2015). Currently, more than 50% of RCCs are detected incidentally, many patients with small renal masses remain asymptomatic until the late stages of the disease, where they present with the classic triad of flank pain, gross haematuria, and a palpable abdominal mass. (Shuch et al., 2014).

Aim of the work

To review the literature for recent updates in Renal cell carcinoma and the new modalities in diagnosis and management of this category of tumors.

Incidence & epidemiology of RCC

Globally, there were an estimated 62,700 new cases of kidney cancer and 14, 240 deaths due to kidney cancer in the United States in 2016. (Siegel et al., 2016)
Incidence of kidney cancer has been increasing in recent decades worldwide, the increase in incidence is likely due in part to increased diagnosis related to use of imaging technologies including ultrasound and computed tomography (CT) scanning, and increased prevalence of risk factors for kidney cancer including diabetes, obesity, and hypertension may also play a role. (Siegel et al., 2016)

Risk Factors

Smoking and obesity-related traits including obesity, hypertension, and diabetes have been consistently identified as risk factors for RCC:

[1] Smoking:

The International Agency for Research on Cancer (IARC) considers there to be "sufficient" evidence that cigarette smoking causes RCC, a meta-analysis of 19 case-control and 5 cohort studies found the relative risk of RCC for ever smokers versus never smokers was 1.38 (95 % CI 1.27–1.50), with a dose-dependent increase in risk for number of cigarettes per day. (Hunt et al., 2005)

Genetics of Renal Cell Carcinoma

Individuals with a family history of RCC in a first degree relative have a 2-fold increased risk of developing RCC themselves.(Gago-Dominguez et al., 2001)

Diagnosis of RCC

[1]Clinical picture :

The kidney is located within the retroperitoneum and as a result many renal masses remain asymptomatic and non-palpable until they are advanced. (Zhang et al., 2002).

I. Renal mass biopsy

Most renal masses can be diagnosed accurately using imaging alone & the histological diagnosis in RCC is established after surgical removal of renal masses, but Percutaneous renal tumour biopsies are increasingly being used:
(1) For histological diagnosis of radiologically indeterminate Renal masses to avoid surgery in the event of benign lesions;

(2) If there is a central lesion or a homogeneous infiltration of renal parenchyma is obsereved on scans to rule out urothelial carcinoma or lymphoma, respectively.
(3) To select patients with small renal masses for surveillance approaches;
(4) To obtain histology before ablative treatments; and
(5) To select the most suitable medical and surgical treatment strategy in the setting of metastatic RCC. (Leveridge et al., 2011& Abel et al., 2010)

Prognosis & screening for RCC
I. Prognosis & TNM staging:
Prognosis of RCC is influenced by anatomical, histological, clinical, and molecular factors, anatomical factors are reflected in the TNM classification and provide the most reliable prognostic information. (Meskawi et al., 2012)

Management of RCC
I) Treatment of Localized Disease :
Surgery is the only curative treatment for clinically localized RCC, with options including radical nephrectomy and nephron-sparing surgery. (Van Poppel et al., 2011)

Each of these modalities is associated with its own benefits and risks, and no one approach is best in all circumstances (Table 6), the balance of which should optimize long-term renal function and expected cancer-free survival. (Tan et al., 2012)

Summary & Conclusion:
Renal Cell Carcinoma (RCC) is the most common solid lesion within the kidney and accounts for approximately 90% of all kidney malignancies, RCC represents 2–3% of all cancers, and it is now the 7th leading cancer type in men in the US & there is a 1.5:1 predominance in men over women, with peak incidence occurring between 60 and 70 year of age. (Siegel et al., 2016)

Incidence of kidney cancer has been increasing in recent decades worldwide, and the increase in incidence is likely due in part to increased diagnosis related to use of imaging technologies & increased prevalence of risk factors for kidney cancer including : smoking, obesity, hypertension , diabetes, analgesic Use, reproductive Factors and end-stage renal disease on long-term dialysis. (Breda et al., 2015, Zhang et al., 2014 & Patel et al., 2015)

The etiology of most RCCs remains unclear, Approximately 2–4% of RCC is hereditary, individuals with a family history of RCC in a first degree relative have a 2-fold increased risk of developing RCC themselves, and Genes relating to Familial RCC syndromes are : VHL, c-Met, FH, FLCN, TSC 1&2 , PBRM1, SETD2, and BAP1. (Su et al., 2015)

Currently, more than 50% of RCCs are detected incidentally at early stages ,but many patients with small renal masses remain asymptomatic until the late stages of the disease , where they present with the classic triad of flank pain, gross haematuria, and a palpable abdominal mass. (Shuch et al., 2014)

Paraneoplastic syndromes are found in approximately 30% of patients with symptomatic RCCs and a few patients present with symptoms caused by metastatic RCC. (Shuch et al., 2014)

Prior to computed tomography (CT), renal masses were diagnosed with intravenous pyelogram or renal arteriography, the traditional approaches now for detecting and characterizing renal masses are US, CT, and magnetic resonance imaging (MRI), and several studies have confirmed that PET has a more variable and overall poorer diagnostic accuracy in detecting RCC than CT. (Lopes et al., 2017)

The Goal of Imaging is to differentiate solid from cystic masses, benign from malignant lesions and to show biological aggressiveness of the tumour & to aid surgical treatment and decision-making. (Nisen et al., 2014)

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