

RESEARCH ARTICLE

Kidney Cancer in Lebanon: a Specific Histological Distribution?

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Abstract

Background: Kidney cancer is the third most frequent urologic cancer in Lebanon after prostate and bladder cancer, accounting for 1.5% of all diagnosed cancers. In this paper, we report the histologic characteristics and distribution of kidney cancer, never described in Lebanon or the Middle East. **Materials and Methods:** Pathology results of operated kidney cancer were collected during a two year period (2010-2011) from two different Lebanese hospitals (Hotel-Dieu de France University Hospital and Saint Joseph Hospital). A total of 124 reports were reviewed and analyzed according to WHO classification of 2009. **Results:** The 124 patients diagnosed with kidney cancer had a median age of 62.4 [18-86], 75% being men and 25% women. Some 71% of the lesions were renal cell carcinoma (RCC), 25.8% had a urothelial histology, 1.6% were lymphomas and 1.6% were metastases to the kidney. Patients having RCC had a median age of 60.3 [18-85], 77.3% were men and 22.7% women. Of the RCCs, 59.1% were clear cell carcinoma, 22.7% papillary, 11.4% chromophobic, 3.4% from the collecting ducts of Bellini and 3.4% were not otherwise classified. **Conclusions:** Histological distribution of Lebanese kidney cancer seems unusual when compared to the literature. The percentage of urothelial renal pelvis tumors is strikingly high. Moreover, clear cell carcinoma accounts for only 59.1% of RCCs in contrast to the 75% described elsewhere, while papillary carcinoma represents more than 22.7% compared to 10%.

Keywords: Kidney cancer - cancer epidemiology - renal pelvis tumor - clear cell carcinoma

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Introduction

Kidney cancer is the third most frequent urologic cancer after prostate and bladder. It represents 2 to 3% of all diagnosed cancer worldwide (Charles et al., 2010). Many risk factors are incriminated in the development and aggressiveness of this cancer including tobacco (Washio et al., 2013) and metabolic syndrome (Ozbek et al., 2013). Malignant cell proliferation originates either from the renal parenchyma or from the renal pelvis. The majority of renal pelvis cancers have urothelial cells origin, representing less than 10% of all kidney cancers, while the Renal Cell Carcinoma (RCC) developed from the renal parenchyma represents more than 90% (Chow et al., 2010). The most frequent histologic subtype of RCC is the clear cell carcinoma of the kidney, representing 75% of these tumors (Lopez-Beltran et al., 2006; 2009). The M/F sex ratio is 2, with a mean age of 64 years at diagnosis (National cancer institute, 2013).

According to the Lebanese National Cancer Registry results of 2008, the incidence of kidney cancer represents 1.48% (138/9292 cases) of all diagnosed cancers in Lebanon (Lebanese National Cancer Registry 2008). To our knowledge, literature is lacking any report dealing with renal cancer epidemiology and histological distribution in Lebanon.

Materials and Methods

This is a descriptive retrospective study evaluating histologically confirmed kidney cancer diagnosed over the past 2 years (2010-2011) in Hôtel Dieu de France and Saint Joseph hospitals in Beirut, Lebanon. The data was collected from the pathology department database of the two hospitals. Benign tumors and pediatric kidney cancer were excluded. Malignant tumors originating from renal parenchyma or renal pelvis were included.

The epidemiologic characteristics analyzed in this study were age, gender and histologic type. Histologic classification was based on the WHO 2004 classification, revised in 2009. The epidemiological characteristics of the urothelial carcinoma of the pelvis, a subtype non-mentioned in the WHO classification were also evaluated since they were included in many other papers discussing the histologic subtypes of kidney cancer.

All the results were analyzed using the SPSS version 20.

Results

124 cases of kidney cancer were diagnosed during the two year period in these two hospitals, with a mean age of 62.44, (range: 18 to 86). 75% (93 cases) of the patients

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Table 1. Summarizes All the Histologic Types of Kidney Cancer with their Proportions, Mean Age with Extremes and M/F Sex Ratio

Histologic Type	N (%)	Mean Age (extremes)	Sex Ratio M/F
Urothelial carcinoma	32 (25.8%)	70.8 (30-86)	2.5
Renal cell carcinoma	88 (71%)	60.3 (18-85)	3.4
Clear cell	52 (59.1%)	61.0 (37-85)	2.7
Papillary	20 (22.7%)	61.1 (43-75)	19
Chromophobe	10 (11.4%)	54.8 (38-76)	2.3
Collecting ducts of Bellini	3 (3.4%)	56.7 (18-81)	2
Unclassified	3 (3.4%)	62.4 (52-75)	2
Renal Metastasis	2 (1.6%)	42.5 (26-59)	1
Lymphomas	2 (1.6%)	50.5 (38-73)	1
Renal Cancer	124 (100%)	62.4 (18- 86)	3

Table 2. Summarizes the Differences in CRR Subtypes Distribution in the Lebanese Studied Population and the WHO Classification 2004-2009.

CRR subtypes	Lebanese CRR subtypes (%)	WHO CRR classification 2004-2009 (%)
Clear cell	59.1%	75%
Papillary	22.7%	10%
Chromophobe	11.4%	5%
Collecting ducts of Bellini	3.4%	1%
Unclassified	3.4%	4 to 6%

were women and 25% (31 cases) men. (Table 1)

25.8% (32 cases) of kidney cancers were transitional cell carcinomas, 71%(87 cases) were renal cell carcinomas, while kidney metastases and lymphomas were encountered in 2 patients each (1.6%). Among the 87 patients with RCC, subtype distribution was the following: 59.1% (52) were clear cell, 22.7% (20) papillary, 11.4% (10) chromophobe, 3.4%(3) collecting ducts of Bellini and 3.4% unclassified. All the results are summarized in Table 1.

Mean age of patients having urothelial carcinoma was 70.37 years with a range from 30 years to 86 years. 71.8% (23) were men and 28.1% (9) were women. The patients with RCC had a mean age of 60.28 years, with a range from 18 to 85 years and a male predominance reaching 77.3%(68).The patients diagnosed with clear RCC had a median age of 60.96 years. 73.1% were men and 26.9% were women. The patients having papillary RCC were mainly men (95% (19)) and had a mean age of 61.15 years. The chromophobe RCC were the youngest patients when compared to the other subtypes with a mean age of 54.8 years and a male predominance reaching 70%. All the histologic subtypes of RCC with their mean age, extreme ages and sex distribution are reported in Table 1.

Discussion

This study was conducted in two different hospitals in Beirut during two years 2010-2011, analyzing for the first time in Lebanon and the Middle East the epidemiological characteristics and histologic subtypes of 124 patients with kidney cancer. The results of this paper can be extrapolated

to the national level and be considered representative of the Lebanese population, since 130 to 140 cases of kidney cancer are diagnosed every year in Lebanon. Hence, this means that around 50% of all diagnosed kidney cancers in Lebanon are reported in our study.

The mean age at diagnosis of patients with kidney cancer in Lebanon is 62.44 years, which is comparable to the results published in the literature. In fact, this number is very close to the mean age reported in the SEER 2006-2010 (National Cancer Institute 2014), which is 64 years. However, the mean age of renal cancer was lower in other Asian countries, it doesn't exceed the 56.4 years in Pakistan (Hashmi et al., 2014) and 57.1 years in Malaysia (Singam et al., 2010). The M/F sex ratio in our studied population representing the Lebanese population is 3. It is comparable to a French study reporting that 68% of patients having kidney cancers are men (Belot et al., 2008). However, the sex ratio in the SEER program 2006-2010 is 2.5.

The first specific feature of our studied population is the percentage of urothelial carcinoma of the renal pelvis representing 25.8% of all kidney cancer, which exceeds by far the percentages reported in the literature. Chow et al (Chow et al., 2010) mentioned that the urothelial carcinoma of the renal pelvis represents less than 10% of all kidney cancer, Korkes et al (Korkes et al., 2006), in a Brazilian study, reported that this number is 11.4% 8, while this percentage was near the 20% of all kidney cancer in a study published by Motzer et al (Motzer et al , 1996). In a Pakistani study, this percentage doesn't exceed the 12.5% (Hashmi et al., 2014). This high percentage of urothelial carcinomas of renal pelvis requires further research to identify its cause. As a first impression, this percentage can be attributed to the high incidence of bladder cancer, which represents the third most frequent cancer in Lebanon (Lebanese National Cancer Registry, 2008). According to our results, the mean age of urothelial carcinoma at diagnosis is 70.37 years with male predominance of 71.8%. These results are close to those reported by Korkes et al showing a median age of 65 years with a male predominance of 70% (Korkes et al., 2006).

The high proportion of urothelial carcinoma also means a low percentage of RCC in Lebanon, which represents only 71% of diagnosed kidney cancer in our study. According to SEER program 2002-2006, RCC represents more than 90% of all kidney cancers diagnosed in the United States (Chow et al., 2010).

The second specific feature of our findings is a different histologic subtype distribution of RCC (Table 1). A low percentage of clear cells RCC and a high percentage of papillary and chromophobe RCC is reported in this population.

The main limitation of this study is the sampling bias, since the patients of only two Lebanese hospitals were included. However, the fact that the sample size represents nearly half of all patients diagnosed with kidney cancers in Lebanon can overcome the mentioned bias.

This study is the first paper discussing the epidemiology and histologic subtype distribution of kidney cancer in Lebanon and the Middle East. Compared to others, the Lebanese population shows some specific features and

characteristics of kidney cancer that may affect in the future the therapeutic approach, the prognosis and survival of patients diagnosed with kidney cancer. Further studies and evaluations are necessary to find a correlation with a Lebanese specific risk factor or genetic mutation that can explain these differences.

In conclusion, compared to the literature, histologic subtype distribution of kidney cancers seems different in Lebanon, according to two medical center records. Next to the high percentage of urothelial tumors of renal pelvis, clear cell carcinoma represents only 59.1% of RCC compared to 75% in the WHO classification of 2004-2009. More studies are necessary to find a potential cause, risk factor or genetic mutation that can explain these specific Lebanese characteristics of kidney cancer.

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