



## Review Article

### Collecting Duct Carcinoma: A Sporadic Entity

Pramod Singh Khatri and Swapnil Sinha\*

Head, Department of Clinical Research, Amity Medical School, Amity University, Gurgaon

\*MSc Clinical Research, Amity Medical School, Amity University, Gurgaon.

#### ARTICLE INFO

##### Article History:

Received on 21<sup>th</sup> November, 2016

Peer Reviewed on 11<sup>th</sup> December 2016

Revised on 19<sup>th</sup> January, 2017

Published on 02<sup>nd</sup> February, 2017

##### Keywords:

CDC, urothelial tumors, tumor entities

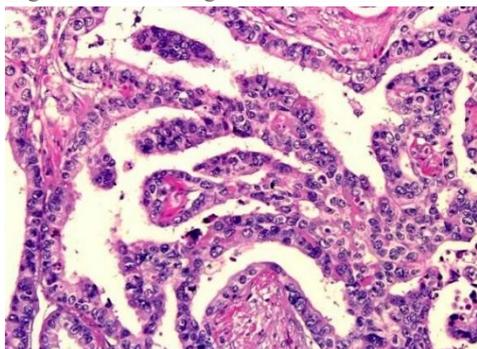
#### ABSTRACT

Collecting duct carcinoma(CDC) shares histological and clinical features with transitional cell carcinomas. CDC is very rare and aggressive kind of renal cancer. There is no proper guideline to deal with CDC. When the disease is reported, then patient will be treated with a chemotherapy schemes followed in urothelial cancer with the help of some platinum salts and combined drug treatment (CDT). The targeted drug therapy is used in treating CDC with multiple metastasis stages based on previous clinical trials but a prospective evaluation is necessary in multicentric level.

## INTRODUCTION:

Collecting duct carcinoma is very rare type of kidney accounting 1-4 % of renal neoplasm, CDC associated with aggressive course and have very poor prognosis originating from epithelium tissue of collecting ducts of nephrons and spread rapidly in stomach, lungs, liver, lymph nodes and urinary bladder. CDC cases predominantly present with metastases at the time of diagnosis. The other renal tumors originate from proximal tubules but the CDC originates from collecting duct and differ in origination to the rest of kidney tumors. CDC is like urothelial tumors type. CDC is less than 1 % of kidney tumors. CDC shares morphological and cytogenetic characteristics with urothelial cancer<sup>1</sup>. The patient hardly survives up to 2 years after diagnosis of CDC. As per immunohistochemically standpoint CDC is positive for vimentin, E-cadherin and cytokeratin's. The amplification of human epidermal growth factor 2 has been reported in many cases. CDC is associated with poor prognosis. The most common clinical presentation involves abdominal pain, hematuria, mass at flanks level. There is no any proper guideline for the treatment of CDC (Fig:1). The CDC respond better to cytotoxic medication of combined drug therapy of platinum based salts like cisplatin and gemcitabine similar in urothelial cancers. The measure criteria of the CDC are that it's very hard to diagnose in case of poorly differentiated high grade carcinomas involving renal sinus region. Major criteria for diagnosis of CDC is exclusion of urothelial carcinomas involving the upper tract (UUT-UC). Histologically, CDC may be defined as the renal cell carcinoma (RCC)<sup>2-3</sup>.

*Figure:1 Collecting Duct Renal Cell Carcinoma*



In CDC, the treatment response of immunotherapy, chemotherapy and using of other cyto inhibitor is not adequate<sup>4</sup>. In CDC, the patient should be taken under strict observation at the time of chemotherapy of combined drug and the route if infusion of drug is peripheral intravenous route. The drug has many adverse effect for example hair loss, vomiting, nausea, itching and effects the vital organs of our body especially liver, kidney, and cardiovascular

dysfunction<sup>5-7</sup>. Most of the patient dies by liver failure and kidney dysfunction. some patient suffered cardiac arrest. Researcher are always interested in developing the drug with lower adverse effect because the cancer drugs are having variety of adverse effect<sup>8</sup>. Now the researchers are trying to developed a drug which is based on cellular genetics, used to hampered the mitotic cellular division of carcinomic cell. It's a big challenge to analyses the DNA of CDC causing cells, as these cells divide continuously and randomly<sup>9</sup>.

## Molecular Biology

The molecular knowledge of CDC is still very limited and the clinical studies are not relevant, only inconsistent studies are available. The clinical trials studies of molecular classification are hampered because of small groups and different technique been used for molecular characterization<sup>10-11</sup>. The chromosomal and cytogenetic analytical studies proved that CDC are characterized by genetic losses in chromosomes 1,6,8,14 and 15. The gain in chromosomes no. 16 and 20. The chromosomal aberration associated with RCC and UC of the renal pelvis has not been reported. The phenomena of translocation, inversion, or other complex arrangements, chromosomal alteration is observed in chromosomal abnormalities in carcinogenic cell<sup>12</sup>. The CDC cells tumors first grow slowly, the symptoms do not appear at this stage. The tumors then grow rapidly and extends to neighboring tissues. Then the process of proliferation boost rapidly and cell start spreading with fast rate<sup>13</sup>.

## Diagnosis

Exclusion of urothelial carcinoma involving upper tract UUT-UC is major criteria for the diagnosis of CDC. The diagnosis of poorly differentiated high grade carcinomas involving the renal sinus region is often difficult<sup>14-15</sup>. There are many clinical similarities between CDC and UUT-UC. The differentiation of these two tumor entities is important for the treatment of CDC. The CDC is defined as subtype of renal cell carcinoma histologically. The differentiation of RCC and CDC is not very tough processes in standard pathology<sup>16</sup>. Some studies report that CDC demonstrates insufficient response to immunotherapy, chemotherapeutics and tyrosine kinase inhibitor.

## Therapies

Various multicenter clinical studies are going on for evaluation of efficacy of triple drug combination. Some cases with adequate response of Tyrosine kinase inhibitors and m-TOR kinase inhibitor has been reported. The targeted therapy should be considered

for treatment of metastatic collecting duct carcinoma<sup>17-18</sup>. The alteration of genetic sequencing is used to find the prime pharmacological targets which are very specific for CDC. In second line of treatment, the survival of patient is prolonged than previous studies. The platinum salt based combined chemotherapy is used to treat the CDC with multiple metastasis. The uses of bevacizumab are very popular but effective in some cases only. The combined treatment of cisplatin, carboplatin, bevacizumab is administered in combined drug therapy. The patient's survival was estimated for having good quality of life during the chemotherapy treatments<sup>19</sup>.

#### Conclusion-

Collecting duct carcinoma is very rare and aggressive type of cancer, sharing some similar properties with urothelial carcinomas. Mostly CDC are diagnosed after metastasis and not in earlier stages. The treatment of early stages is nephrectomy but on later stages chemotherapy is required. New clinical trials are necessary for the correct evaluation of targeted therapy and to make it more prominent and effective. At present time, the targeted therapy are not very promising for treatment of CDC.

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