Kidney damage associated with tumor

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Abstract—Purpose: Explore the relativity between tumor and kidney damage. Methods: Present the pathogeny, nosogenesis, clinical manifestation, treatment and prognosis of kidney damage what is resulted from tumor in addition to kidney through two cases of clinical data about patient suffering from kidney damage associated with tumor. Conclusion: There is a certain inherent link between Tumor and kidney disease. The tumor in addition to kidney can result in the damage of renal function. With the recurrence and deterioration of tumor, kidney disease can be reproduced or aggravate. Kidney damage associated with tumor can also lead to renal failure rapidly. When the chronic renal failure, it requires regular hemodialysis treatment, which will play an active role in extending survival time of patient. For middle-aged patient suffering from tumor, pay particular attention to whether or not kidney damage at the same time, or observe regularly whether or not there will be the possibility of kidney damage. In case of the occurrence of tumor, it would be better to inspect regularly for kidney patient who was usually treated by immunosuppressor.

Keywords- kidney damage; tumor; renal failure; hemodialysis; nephrotic syndrome

I. INTRODUCTION

Kidney damage associated with tumor gradually attract people's interest, as early as 1878, it is reported that renal glomerular disease may be supervened by the therioma in addition to kidney, in 1922 Galloway reported for the first time the relationship between tumor in addition to the kidney and nephrotic syndrome, in 1966 Lee and others made similar reports, they found that there existed 11 cases of malignant tumor in 101 cases of patients with nephrotic syndrome, accounting for 10.9 percent of the total numbers. At present, the tumor tha can damage the kidneys through various channels has been found, and renal complications associated with tumor have become one of the important factors that decide the prognosis of patients[1].

Lung cancer, mammary cancer, stomach cancer etc. are common noumenal therioma which result in kidney damage, and tumor of rectum, pancreas, pate, biliary passage, liver etc. are not. The tumors of blood system, such as: multiple myeloma, Hodgkin's disease, leukemia, lymphadenosarcoma, malignant histiocytosis etc., can result in kidney damage.

Fig.1 are nephron and vessel of kidney, Fig.2 are nephron damage.

Kidney damage and End Stage Renal Disease(ESRD) are caused by multiple myeloma which is one of the important pathogeny[2]. Nearly 20% patients of myeloma are suffering from renal failure. Although multiple myeloma accounts for only about 1% of malignant tumors, statistics from 1997 to 2001 show that ESRD is caused by multiple myeloma accounts for 58% of renal damage associated with tumor. Many cases show that there is a certain inherent relation between tumor and kidney disease, kidney disease associated with tumor can also lead to renal failure rapidly[3]. The author cites two typical cases now, describe below:
II. Case Introduction

Example 1: Male, 44 years old, was treated in May 2008 because of repeated edema of facial surface and both lower extremities for six months, the patient was diagnosed as rectal cancer in August 2006. Fig.3-5 are cells of rectal cancer. Then performing surgical operation, but tumor could not isolate from the bladder and pelvis during the operation, so perform sigmoidostomy. At that time, the patient’s blood routine analysis was WBC7.6G/L, GRAN64.4%, RBC4.57T/L, HGB126G/L, PLT152G/T; renal function and electrolyte was normal. After surgery, the patient was treated with chemotherapy.

Example 2: Male, 78 years old, was treated in January 2008 because of hematuria, the patient was diagnosed as prostatic cancer for two years. Fig.6 are cells of prostatic cancer. So done a physical examination: moderate anemia, edema of facial surface and lower extremity. Routine urine test was: urine protein:++; Blood routine analysis was: WBC4.5G/L, GRAN85.4%, RBC2.56T/L, HGB82G/L, PLT198G/L; Renal function was: BUN45.32mmol/l, SCR1021umol/l; Electrolyte: K+6.3mmol/l. B-ultrasomotography suggested right kidney atrophy and left kidney effusion. Based on the above analysis, diagnosis was chronic renal failure, uraemia and hyperkalemia. Hemodialysis and corresponding treatment was adopted. And then symptoms turned better. But in February 2008, the patient had gone to hospital again because of hematuria. Diminishing inflammation and hematischesis were adopted for five days. Since the patient was old, and his body condition was too bad, surgical was not suggested, we proposed gamma knife. In April 2008, die for cropping up.
III. DISCUSSION

A. pathogeny

The pathogeny that is resulted from kidney damage associated with tumor is usually caused by multiple factors, some are caused with the tumor itself, others are affected by complication for the tumor and reaction of the treatment process. It is clinically classified as three types: prerenal, renal and postrenal[1]. In short, therioma in addition to kidney brings about kidney damage, such as:(1)tumor in addition to kidney directly infiltrates kidney, which causes kidney damage, tumor cells can be harmful to the renal parenchyma, the renal interstitium, the vessel of kidney, the urine and the surrounding tissue of tumor by blood, lymph and directly spreading, the most common way of forms is tumor of blood system. (2)The damage result from immune mechanism, is chiefly glomerulopathy which is mediated by immune complex, it occurs most frequently in Hodgkin's disease and shows most clinically nephrotic syndrome. (3)The abnormality of tumor metabolism causes to kidney damage, it shows most clinically hyperuricemia, hypercalcemia and hypopotassemia. (4) The damage of chemotherapy and radiotherapy: among antitumor drugs what can produce nephrotoxicity , the derivant of platinum is a kind of compounds what mostly can cause kidney damage, and also can produce coordinate nephrotoxicity with other anti-tumor drugs. It produces the radioactive kidney-damage among some kinds of radiotherapies. According to Schrier RW, the blood system will present kidney-damage resembling the hemolytic uraemia after tumor radiotherapy. (5) In the advanced stage of tumor, it can show general organ-failure, mal-nutrition, forming massive ascites, fragmentation and bleeding of the tumor in the abdominal cavity, dramatically declining of effective blood volume, taking influence on the perfusion of tumor, and so on[4].

B. nosogenesis

The nosogenesis of pathogeny that is resulted from kidney damage associated with tumor may have been caused by following factors: (1)kidney-damage caused by the anti-tumor antibody: the tumor is possessed of some specific antigens, such as tumor antigen and tumor antigen, those can steady exist and stimulate the organism which will produce the antibody, the antibody may have mediated damage of renal glomerular. (2) antineutrophile granulocyte: according to Ydeidag's report, esophageal cancer and nephrotic syndrome are probably related to the cytoplasm antibody of neutrophile granulocyte. (3) deposit of the immune complex: according to Zinger's report, a patient will suffer the nephrotic syndrome, 1 year later when he was partly resected a tumor. It may be that the tumor antigen can combine with antibody and form a great deal of immune complex depositing renal glomerular, and be illness. (4) In a loss of balance of the immunoregulation: the pathogeny that is resulted from kidney damage may be associated with the disorder of T-cell’ immunization and interleukin-2. (5)The affectability of the crowd: some patients are triggering the affectability of tumor when they are under renal treatment by receiving immunosuppressor. (6)A sudden change of tumor-suppressing WT1-gene: according to Schunacher, Barbaux's report, tumor-suppressing WT1-gene relates to the nephrotic syndrome, which will sharply develop the renal failure accompanying the child with Wilm’s tumor or Frasier syndrome[3].

C. Clinical manifestation

The therioma gives rise to kidney damage(nephritis related with tumor), it clinically shows all kinds of leukemia, lymphadenoma, multiple myeloma, lung cancer, liver cancer, mammary cancer and carcinoema of colon, and so on[2]. The malignant histiocytosis is therioma, which is resulted from rhagioctine cells and the predecessor of original cells are under a progressive and invasive paraplasm, it can cause systematical damage. It manifests some symptoms, such as fever, the significant fall of weight, weakness, anemia, the decrease of white corpuscles and blood platelets and the enlargement of the liver, milk, and lymph nodule. 2 cases above can mainly manifest the progressive emaciation, anemia, the decrease of white corpuscles in blood, the presence of excessive amounts of protein in the urine, the low level of potassium, and metabolic acidosis, there are both the damage of renal glomerular and the injury of renal tubules.

IV. SUMMARY

Kidney disease associated with tumor is a secondary kidney disease, which is caused by the tumor, most of these tumors are malignant of alimentary canal and respiratory tract , it shows most clinically hyperuricemia. These tumors can occur before kidney disease, also can after a few months or years, then exist together.

For the patients with kidney disease associated with tumor, the key treatment is operation for the tumor as soon as possible, the patients who cannot operate for the tumor should be chemotherapy and radiotherapy as soon as possible. Plenty of documents shows:the successful treatment for therioma, includes resection, chemotherapy or radiotherapy etc, all can alleviate most of kidney-damages, such as the decrease of urine protein, the improvement of renal function, the extinction of histology change, etc. However, as far as mentioned above this paper, chemotherapy and radiotherapy also can cause the kidney damage or aggravate the kidney damage, and during the past 20 years, as the spectrum of disease have been altered and become new, the mode of radiotherapy have been more frequent the main pathogeny of kidney damage associated with tumor. The person suffering from tumor associated with chronic renal failure need to involve hemodialysis regularly, and lead to positive effects on extending the patient's lifetime, especially for an advanced stage of tumor associated with chronic renal failure, that forecasts the illness is so dangerous, some patients will abandon the treatment because many factors, but hemodialysis can clear up some toxin and metabolin, and get rid of excess fluid, high-flux hemodialysis can also clear up some mediators of inflammation, and maintain homeostasis in the organism, and help improving the illness, and extend the patient's lifetime, and enhance the living quality, some patients for acute renal failure will return to renal normal in a short time, and afford opportunity for the operation or further chemotherapy and radiotherapy. In addition, adding some water and electrolyte in time, it is certainly good for the
treatment to avoid the low-level potassium and sodium, the high-level calcium and the imbalance of acids and bases.

Prognosis of kidney damage associated with tumor decide on two aspects, one depends on malignant degree of tumor and serious degree of kidney damage, the other one depends on early diagnosis and positive intervention.

In short, for the middle aged and elderly patient with tumor, should pay special attention to whether there is the kidney damage at a same time. It is essential for routine urine test, or regularly observe if there is the possibility of the kidney damage. For the patients who is disable of renal function for inexplicable reasons, there is a simple and effective method for the examination of tumor in gastrointestinal tract, that is the examination of the fecal occult blood, have a examination of gastroscope or colonoscopy, if necessary, if the patient who is weak and unacceptable, it is is available for the stomach intestine barium meal, or the barium enema, there are some value for the early discovery of stomah cancer and carcinoma of colon. For the patient with tumor who often uses immunosuppressor for treatment, he had better have a examination regularly, on guard against the manifestation of tumor, and should clinically pay great attention to and search for the possible tumor.

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REFERENCES