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Safely Chemotherapy Administration in Patient with Small-cell Lung Cancer and End-stage Renal Disease Undergoing Haemodialysis

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Lung cancer is the leading cause of death in many countries. Small cell lung cancer is a chemo-sensitive malignant disease and the application of chemotherapy is generally the first and most important therapeutic approach. However, there are no clear recommendations for the use of chemotherapy in the presence of chronic renal failure treated by hemodialysis. The case of a 54-year-old patient with small cell lung cancer and chronic renal failure due to hypertensive hemodialysis nephropathy is presented. In the first chemotherapy, 6 cycles of carboplatin / etoposide chemotherapy were administered. If the disease progresses, second-line chemotherapy with 4 cycles of cyclophosphamide / vincristine / doxorubicin has been safely applied

A 54-year-old man with chronic renal failure due to hypertensive nephropathy developed symptoms of apnea, cough and hoarseness in March 2014. He had undergone hemodialysis three times a week in the past 5 years. This patient was a smoker with a history of 40 packs per year. Physical examination established an enlarged lymph node in the lower supraclavicular region. Its Eastern Cooperative Oncology Group (ECOG) performance status was 1. In laboratory blood tests, creatinine (769 μmol / L) and urea (12.9 mmol / L) were elevated with anemia (erythrocytes 3.2 × 1012 / L, hemoglobin 113 g / L). The arterial blood gas values were pathologically ndLnJ-free. The chest x-ray showed the upper lobar ln at ltratLon with hilar enlargement. In thoracic computed tomography, an Ln tr ltratLon tumor in the upper lobe of 64 mm in diameter was noticed with enlarged lymph nodes along the paratracheal, 55 mm in diameter and 45 mm sub-carcinoma, as well as a nodule in the 25 mm diameter tabule (Figure 1). On the abdomen CT scan, a 28 mm increase in the retroperitoneal lymph nodes was observed. A biopsy of the supraclavicular lymph nodes confirmed small cell lung cancer, with the clinical and radiological stage of the disease T3N3M1b (extended stage, extensive diseases-ED). In accordance with its good state of performance and the chemosensitivity of the disease, we opted for carboplatin / etoposide chemotherapy. First-line chemotherapy in 6 cycles was applied every 4 weeks. Carboplatin was applied on the first day of the cycle, which was also an interdialysis day. The dose of He was calculated according to the Calvert formula

The applications of chemotherapy and hemodialysis must be well coordinated. It is necessary to determine what fraction of the drug is eliminated by hemodialysis. For drugs with high renal elimination, chemotherapy should be administered by dialysis to avoid elimination of the drugs and loss of e ت cac \. However, for drugs which are not eliminated by hemodialysis sLJnL ت cantl \, administration can be carried out at any time [3]. Data on the application of chemotherapy in patients undergoing hemodialysis are de ت cLent, mainly cases or trials on a small group of patients. Kim et al. reported the pharmacokinetics of carboplatin and etoposide in patients with lung cancer and chronic renal failure undergoing hemodialysis. This document has shown that the plasma chemotherapeutic values are similar in patients with normal renal function and in those with renal Lnsu ت cLenc \ treated with hemodialysis. Carboplatin concentrations decrease rapidly during the first 24 hours, but remain longer in the plasma during subsequent chemotherapy cycles. The concentration of etoposide in plasma decreases slowly, but also persists longer until the next cycle of chemotherapy [2]. Janus et al. recommended the application of certain chemotherapeutic products in hemodialysis patients [3]. Carboplatin is eliminated by more than 95% of the kidneys and it is recommended to apply it on a day of interdialysis. About 70% to 80% of the administered dose of cyclophosphamide is converted to metabolites by liver enzymes and 30% to 60% is eliminated by the kidneys. The recommendations are to reduce the dose by 25% in hemodialysis patients. Data on the pharmacokinetics of doxorubicin in patients with renal impairment are very limited. Doxorubicin is not eliminated via the urinary tract and there is no need to change the dose. About 40% of the etoposide dose is eliminated by the kidneys. It is recommended to reduce the dose by 50% in

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