Summary and Conclusion

Background:

Cisplatin is an effective chemotherapeutic agent used in the treatment of a wide variety of solid tumors .The major side effects limiting its clinical use is the nephrotoxicity.

The aim of this work:

Was to study the possible protective effects of vitamins C and E on Cisplatin nephrotoxicity in adult albino rats and also the effect of cisplatin withdrawal on the cisplatin induced nephrotoxicity in rats.

Materials and Methods:

Forty adult male rats were divided into four equal groups: The control group, Cisplatin group and Cisplatin plus vitamins C and E group and withdrawal group.In the control group ,the rats were injected intraperitoneally with 2ml of normal saline /kg .B. W. once daily for 3 consecutive days. In the Cisplatin group , the rats were injected intraperitoneally with Cisplatin at dose of 10mg /kg .B.W. once daily for 3 consecutive days. In Cisplatin plus vitamins group, the rats were injected intraperitoneally with Cisplatin as the second group ,in addition to vitamins C and E at dose of 250mg/kg .B.W .each. The vitamins were administrated orally with a cannula one hour prior to Cisplatin injection. The withdrawal group was also received cisplatin in the same dose as the second group for 3 consecutive days and then remained without cisplatin for 28 days. The animals were sacrificed 3 days after the last injection. The animals of withdrawal group were sacrificed after 28 days from the last injection.The kidney specimens were prepared for light and electron microscopies.

Results:

Cisplatin produced necrosis of the epithelial lining of most of the proximal convoluted tubules with subsequent dilatations of their lumens .Some of these tubules contained esinophilic material .The epithelial cells of some tubules contained many vacuoles . Cisplatin induced focal condensation of the connective tissue and inflammatory cells in the interstitial spaces. Electron microscopic examination showed that the Cisplatin produced reduction in the numbers of mitochondria and the microvilli with increasing the numbers of lysosomes ,vacuoles and vesicles. Cisplatin obliterated the pores in the glomerular endothelium and in between the foot processes of the podocytes. Administration of vitamins C and E during the Cisplatin injection reduced the pathological changes induced by Cisplatin. The severity of these changes in the tubules and the glomeruli were less than those in the Cisplatin group.

Also with cisplatin withdrawal, there was moderate reduction of cisplatin toxic effect on the renal cortex of rats with slight return to the picture of control group.

Conclusion

The toxic effects of Cisplatin on the kidney was minimized byadministration of combination of vitamins C and E .

Also the long-term cisplatin withdrawal is able to decrease the toxic effects of cisplatin on the kidney. Also further clinical trials are required to determine the appropriate dose of cisplatin withdrawal after a considerable peiod of time, will achieve optimal recovery.