Effects of Poly-plat, SSP, SAP and Cisplatin on the Testis of Rats

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ABSTRACT

In the present study, Polyglat, SSP and SAP are second generation analogs of cisplatin, the main and most active representative of antitumor platinum complexes. On the morphology of the testis of male rats were investigated histologically by examining semithink section. Polypoly, SSP and SAP administered in doses of 10 mg/kg and applicable as a single intraperitoneal injection. For comparison purpose, the parent compound Cisplatin [cis-diamminedichloroplatinum (II)] as administered at equitoxic doses (1.8 mg/kg) at various intervals between days 1, and 30. Four compounds effected structural alteration of Sertoli cells, disrupted the blood testis barrier and impaired the processes both of spermatogenesis and spermiohistogensis in different degrees. The structural damage in testis following treatment by mean of Polyplat, SSP and SAP were at least as pronounced as that occurring under the influence of equi toxic doses of cisplatin. Results show Polyplat, SSP, and SAP were changed small structure of testis in morphology comparing with control group. But all side-effects of them are more small than cisplatin.

Key Words: Cisplatin, Ply-plat, SSP, SAP, Morphology, Platinum compound, Cell structure

Introduction

Since the detection of antitumor properties of some platinum compounds by Tosemgerg and coworker in 1969 **[9]**. The inorganic complex cisplatin [cis-diamminedichloroplatinum (II)] has been confirmed to be one of the most board spectrum anticencer drugs available today for the clinical treatment of human solid carcinomas **[10, 13]**. It is proven to be effective in the treatment of testicular, ovarian, uristat , bladder, head, neck ,lung cancers and enhanced immuno stimulation **[1, 3, 6, 10, 14, 15, 17, 18]**. However, as cisplatin is burdened by severe side-effects. Such as nephrotoxicity, neurotoxicity, gastrointestinal irritation and a profound disturbance of the patients' general behavior, the clinical administration of cisplatin can be actually limited by the interference of non-tolerable side-effects **[2, 4, 7]**. Poly-plat Poly-[(trans-1,2-diaminocyclohexane) platinum]-carboxyamylose, SSP [(5-sulfosalicylato-trans-(1,2-diaminocyclohexane) platinum] and SAP [(4-hygroxy-α-sulfonylphenylacetato (Trans-1,2-diamonocyclohexane) platinum II)] as well as carboplatin are second generation analogsofcisplatin with higher efficacy and potency, while eliciting less toxicity **[16]** No invention is yet available can concerning the influence of Poly-plat, SSP and SAP. Considering these increasingly replaced cisplatin in clinical chemotherapy, we investigated in the present study the influence on the Poly-plat, SSP and SAP appearance of the testis of rat in comparison to cisplatin applied at equitoxic dose levels.

Materials and Methods

Male Waster rat, purchased from Animal Center of Michigan State University, were kept under standard conditions and received food and rap water. At the beginning of the experiment, they were 132-148 g and were treated with single intraperitoneal injections of Poly-plat (10mg/kg), SSP (10mg/kg), SAP (10mg/kg) and cisplatin. 0.18mg/kg/day at intervals of 1 and 5 days, then killed by 7, 12, 20, 30 days after first injection. Two animals of each group were anaesthetized and perfused with a fixative solution. For this purpose, the thorax of the animals was opened, injected 0.9 ml of equithesin I.P. for each rat, insert the needle into left ventricle and cut the right atrium. Perfused with normal saline for 2 min and put 4% paraformaldehyde 15 min. Thereafter, the testis were removed. Immersed for another 24 h in fixative solution. postfixed with a 1% solution of osmium tetroxide in cacodylate buffer, dehydrated. Semitic sections of 8 um were prepared, mounted and stained with pigment.