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Cochlear cell death induced via cisplatin or gentamycin in combination with furosemide in rodents

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Abstract

Ototoxic models of animal represent an elemental tool in basic otological research. In the present study, using guinea pigs we compared cochlear lesions mediated via cisplatin applied in terms of two regimens: consecutive application alone and in combination with furosemide. The influences of furosemide alone were also assessed; it was observed to result in temporary hearing loss and reversible damage to the stria vascularis. Consecutive administration of cisplatin alone tended to be disadvantageous because it bred progressive body weight loss and higher mortality compared with the combined regimen, which utilized a smaller cisplatin dose. The combined regimen brought about remarkable hair cell loss without corresponding lesion of spiral ganglion neurons (SGNs). This difference suggests that the co-administered regimen did not mimic the damage to cochlear neuronal innervation caused by clinical application of cisplatin. In the meantime, we spread this method to the ototoxic model build in mice. Co-administration of gentamicin and furosemide caused marked hair cell loss as well as less mortality compared with consecutive application of gentamicin in mice. Due to different pharmacokinetics between cisplatin in guinea pigs and gentamicin in mice, the injection regimens of co-administration of furosemide - cisplatin in guinea pigs and gentamicin – furosemide in mice were varied. Overall, the methods of co-administration of cisplatin/gentacimin and furosemide in rodents facilitate ototoxic model build.

Biography

Li Xia has completed his PhD at the age of 31 from Shanghai Jiao Tong University. Now he is the staff in the Dept. of Otorhinolaryngology of Shanghai 6th People's Hospital. He has published 4 papers in reputed journals. Besides, he has the experience of resident for three years and the experience of working overseas for one year (Ear Lab, Dalhousie University, Canada). He could communicate fluently with the people from English-speaking countries.