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EFFECTS OF HIGH-SALT DIET ON THE REMODELLING OF CAROTID ARTERIES AND THE INTERVENTION OF TELMISARTAN IN WISTAR RATS

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Objectives To study the influence of high salt diet on blood pressure and carotid artery remodelling and the intervention of telmisartan in Wistar rats.

Methods 60 Wistar rats were fed a normal salt diet (Control group, 0.5%NaCl), high salt diet (M group: 8% NaCl), and high salt diet + Telmisartan (Tel group, 8% NaCl+ Telmisartan) until 24 weeks. After the end of experiment, M group was divided into hypertension group (MH) and normal blood pressure group (MN) according of the tail-cuff blood pressure. The structural changes and proliferation in the media of carotid artery were observed by HE staining, Masson staining and immunohistochemical. Expression of TGF- β 1, smad2/3, smad7, AngII, AT1 and AT2 in media of carotid arteries were measured with immunohistochemistry method. Aldosterone in vessel was measured by radioimmunoassay.

Results (1) Media thickness (MT), ratio of media to lumen (MT/LD), proliferation index (PI), collagen fibre area percentage of carotid arteries in MH and MN groups were increased compared with that of the control group ($p < 0.01$), But MT, MT/LD, PI, the collagen volume fraction in Tel group decreased significantly ($p < 0.01$). (2) compared with the control group, the TGF- β 1, smad2/3 in MH and MN groups were higher ($p < 0.01$), and in Tel group was decreased significantly ($p < 0.01$). smad7 of carotid arteries media in control group was increased than in other three groups ($p < 0.01$), Tel group was increased significantly compared with MH and MN groups ($p < 0.01$). (3) AngII of carotid artery was no difference in each group ($p > 0.05$). The AT1 expression in MH and MN groups were higher than in the control group ($p < 0.01$), and were much lower in telmisartan group ($p < 0.01$). The AT2 expression in MH was increased significantly compared with that of other three groups ($p < 0.01$). The AT2 of expression in MN and Tel group were increased compared with that of the control group ($p < 0.01$). The aldosterone level in carotid arteries media was increased in MH groups compared with that of the control group ($p < 0.05$).

Conclusions Long-term high-salt diet can cause the carotid artery remodelling directly or through high blood pressure, it may be related to positive and negative regulation of signal transduction in TGF- β 1/smads and the RAAS components in local tissues. Telmisartan can prevent high salt-induced hypertension and remodelling of carotid artery.