

Minocycline prevents transient focal neurologic deterioration due to cerebral hyperperfusion after EC-IC bypass for moyamoya disease

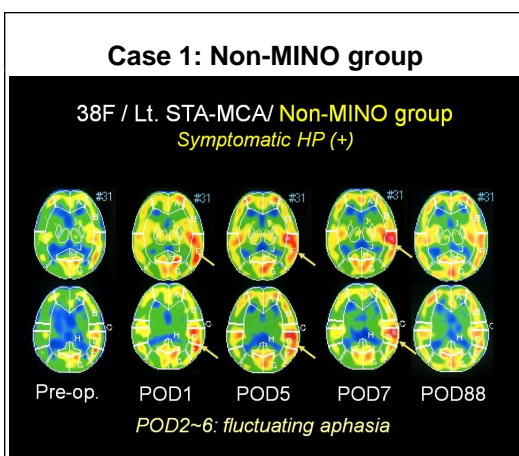
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BACKGROUND

Cerebral hyperperfusion (CHP) is a potential complication of STA-MCA anastomosis for moyamoya disease (1,2), while optimal postoperative management protocol has not been established. Minocycline has a potential role for preventing matrix metalloproteinase (MMP)-9 which contribute to the edema formation and hemorrhagic conversion after cerebral ischemia-reperfusion injury (3). Furthermore, patients with moyamoya disease are reported to have increased serum MMP-9 level (4,5). Thus we examined the effect of minocycline on preventing postoperative CHP after STA-MCA anastomosis for moyamoya disease.

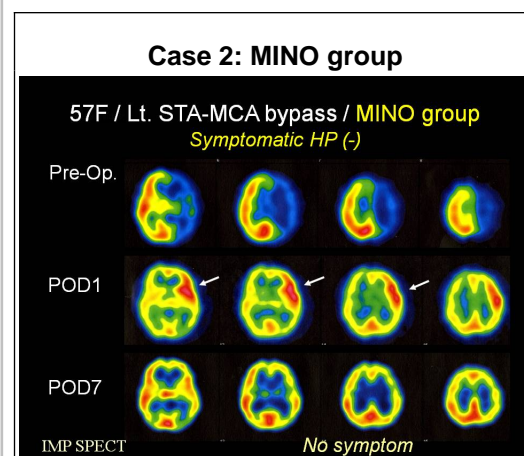
OBJECTIVE

To evaluate the effect of minocycline on preventing postoperative CHP in patients with moyamoya disease.



PATIENTS AND METHODS

N-isopropyl-p-[123I]iodoamphetamine single-photon emission computed tomography was performed 1 and 7 days after STA-MCA anastomosis on 178 hemispheres from 129 consecutive patients with moyamoya disease (2-69, mean 33.7 years). Most recent 31 hemispheres were managed by intra-operative and postoperative intravenous administration of minocycline hydrochloride (200mg/day). The postoperative blood pressure was strictly controlled under 130 mmHg in all minocycline-treated patients. Then incidence of symptomatic CHP and ischemic complication was compared with 105 patients undergoing 147 surgeries managed without minocycline.



RESULTS

Symptomatic CHP was seen on 27 operated hemispheres in non-minocycline group (27/147, 18.4%), but only on 1 in minocycline-treated group (1/31, 3.2%) ($p=0.0354$). Ischemic complication was seen on 4 operated hemispheres in non-minocycline group (4/147, 2.7%), while on none in minocycline-treated group (0/22) ($p=0.353$). There was no adverse effect of minocycline after 31 surgeries.

CONCLUSION

Administration of minocycline in combination with strict blood pressure control may contribute to prevent symptomatic CHP after STA-MCA anastomosis for moyamoya disease.

Learning Objectives

Intensive blood pressure control in combination with minocycline administration reduces the risk of postoperative symptomatic CHP after STA-MCA anastomosis for moyamoya disease.

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Result		
Symptomatic cerebral hyperperfusion (CHP) after STA-MCA bypass for moyamoya disease Comparison between MINO & Non-MINO groups		
	MINO group	Non-MINO group
Hemispheres (Patients)	29 (26)	147 (105)
Symptomatic CHP	1 (3.4%)*	27 (18.4%)
Ischemic complication	0 (0%)	4 (2.7%)

*P=0.035: Significantly lower