

Hyperlipidemia may attenuate rupture of a cerebral aneurysm in the mouse model.

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[Introduction] Subarachnoid hemorrhage (SAH) is a life-threatening type of stroke and can be frequently caused by a ruptured aneurysm of cerebrovascular blood vessels. Although one third of patients could survive with good recovery; one-third will survive with a disability; and one-third will die.

It is well accepted that lowering blood cholesterol level is mandatory in prevention of cerebral circulatory disorder. However, the relationship between cholesterol and cerebral aneurysm is still controversial.

In this study, we elucidate the above relationship by monitoring aneurysm and SAH in 1) aneurysm model of LDL receptor/ Apobec 1 double knock out (LA-/-) mice and that of control mice. 2) Reducing cholesterol intake by administering Cholestyramine, cholesterol lowering cationic resin, to LA -/- aneurysm model mice together with daily food.

[Method] Experiments were conducted in accordance with the guidelines of the Institutional Animal Care and Use Committee of Hamamatsu University School of Medicine, Hamamatsu, Japan.

Hashimoto model of animal cerebral aneurysms was performed.

Briefly, left kidney was excised one week before the experiment. Elastase was administered to the subarachnoid space to damage cerebral artery and sustained-release deoxycorticosterone was placed subcutaneously. Drinking water was substituted with 1% salt solution. Three weeks later, the brain tissue was harvested for evaluation of cerebral aneurysm and subarachnoid hemorrhage.

[Results] 1) lesser amount of cerebral aneurysm and SAH were detected in aneurysm model of LA-/- mice compared to control mice.

2) Increasing trend of SAH was observed in LA-/- mice with cholestyramine administered group.