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Attenuation of Vasospasm by Dexmedetomidine after Experimental Subarachnoidal Haemorrhage in Rabbits



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Abstract: Aim: Vasospasm is one of the most important factors that influence the successful treatment of ruptured intracranial aneurysm. We studied if vasospasm following subarachnoidal haemorrhage (SAH) can be alleviated by dexmedetomidine in an animal model. Materials and Methods: Experimental SAH was induced in 12 of 18 New Zealand rabbits by intracisternal injection of autologous blood. Control animals (sham SAH, n = 6) received intracisternal injection of the respective volume of physiological saline solution. Forty eight hours after the operation, rabbits in sham SAH and SAH-alone (n = 6) groups were infused intravenously with 0.9% sodium chloride for 2 h, whereas rabbits in SAH-dexmedetomidine group (n = 6) received intravenous infusion of 5 µg/kg per h dexmedetomidine for 2 h. All rabbits were sacrificed with penthotal 24 h after infusions. Basilar arteries were isolated and processed for histology. Results: The histological specimens revealed evidence of arterial narrowing and vascular wall thickening in both SAH-alone and SAH-dexmedetomidine groups. The wall thickness of basilar artery significantly increased and lumen diameter significantly reduced in SAH-alone group in comparison with basilar arteries from other groups (P < 0.05). SAH-dexmedetomidine group revealed attenuation of vasospasm formed after 72 h. Conclusions: Our study showed that vasospasm is attenuated by dexmedetomidine administered after vasospasm is formed in a rabbit model.

Key Words: Dexmedetomidine, subarachnoid haemorrhage, vasospasm

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