

Introduction

We aimed to develop a model of middle cerebral artery (MCA) occlusion and reperfusion in NZW rabbits using fluoroscopically guided endovascular devices.

Methods

Studies were conducted on six consecutive 4.5-5kg NZW rabbits. All animals were anesthetized with isoflurane. The first group (n=2) underwent neck dissection until the common carotid artery (CCA) was visualized. A small arteriotomy was created in the external carotid artery (ECA) through which a flame-blunted 6-0 silk suture was introduced and advanced into the internal carotid artery (ICA). In the second group (n=4) femoral access was established using a 5F sheath. A 1.9F catheter was used to advance a 0.010” guide wire into the distal ICA. In both groups, occlusion was maintained for 2hrs then the occluding device was withdrawn. All rabbits underwent neurological examination every 6 hours. At 24hrs all rabbits were euthanized and brains were histologically examined for ischemia using 2,3,5-triphenyltetrazolium chloride (TTC) staining.

Results

All rabbits underwent general anesthesia without any complications. In the first group the intraluminal suture would not advance beyond the foramen of the basisphenoid bone. In the second group femoral access was established successfully in all animals. The microcatheter was advanced into the ICA in 4 rabbits. The guidewire was advanced to the distal ICA in 3 animals. Severe vasospasm prevented ICA catheterization in two rabbits and microwire advancement in one rabbit. Of the 3 rabbits with successful microwire advancement to the distal ICA, none showed functional or histological evidence of cerebral ischemia.

Conclusions

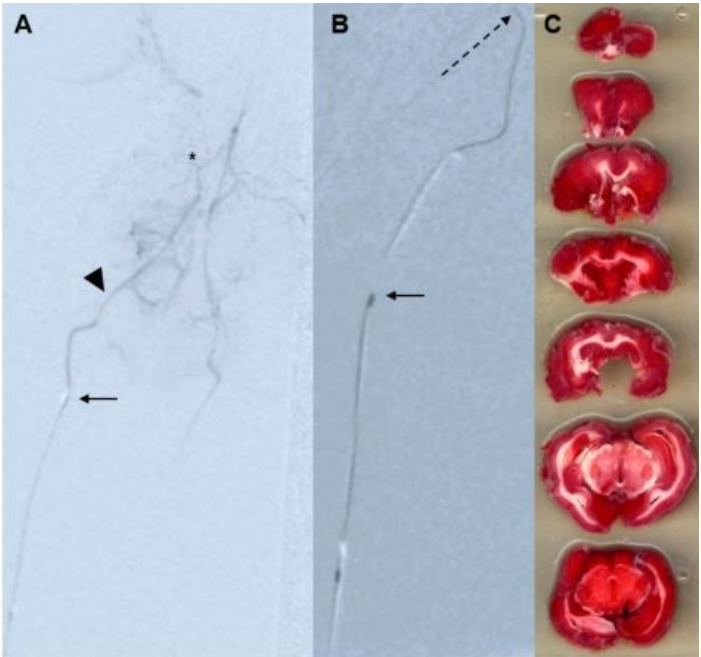
NZW rabbits can be used to introduce endovascular devices into the cerebral vasculature. Smaller devices and adjunctive calcium channel blockers may be needed to develop a consistent model of cerebral ischemia and reperfusion.

Learning Objectives

Understand endovascular techniques used to enter the cerebral vasculature of New Zealand White rabbits

[Default Poster]

Figure 1. Representative angiographic and histological findings



A) Anterior-posterior view. Catheter is in the proximal internal cerebral artery (arrow). Arrow head shows tapering of ICA as it enters the skull base. Asterisk shows the origin of the middle cerebral artery. B) Arrow shows catheter tip in the proximal ICA. Dashed arrow shows distal microwire. C) 2,3,5-triphenyltetrazolium chloride (TTC) staining showing no evidence of ischemia