

Permanent vascular catheterization for intravascular access is one of the most commonly applied techniques used on rodents in pharmacology studies” Allavena et al (2016).

Abstract:

Permanent vascular catheterization for intravascular access is one of the most commonly applied techniques used on rodents in pharmacology studies. However, use of the intravascular catheters is complicated by nontolerance due to thromboembolic disease and sepsis.

We have undertaken an extensive pathologic and clinical analysis of an intravascular catheterization model in Wistar Han and Sprague-Dawley rats, with a particular focus on carotid artery catheterization with or without jugular vein catheterization, in order to define the pathologic mechanisms behind nontolerance and define clinical end points to ensure maximal animal welfare. Further, we have explored various potential solutions to increase the tolerance of the procedure. In these studies, indwelling catheters were found to cause a high degree of thromboembolic disease with infarction in the brain, cecal tip, and kidneys being the primary causes of nontolerance. Loss of greater than 10% body weight was determined to be the most sensitive indicator of nontolerance and was closely correlated with degree of renal parenchymal loss. Sepsis was noted as a very rare complication, indicating that routine aseptic surgical techniques are adequate for preventing this complication.

Reference:

Allavena, R.E., West, H., Gale, J. and Debrue, M. (2016) Pathological and Clinical Analysis of Vascular Catheterization Models in Rats, with Exploration of Interventions to Improve Clinical Tolerance. Toxicologic Pathology. September 14th. .

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