

Kaolin was injected bilaterally into the subarachnoid space overlying the cranial convexities in 20 adult rats. Magnetic resonance imaging (MRI) was obtained by using an 11.7 T scanner at 14, 60, 90, and 120 days after kaolin injection. Locomotor, gait, and cognitive evaluations were performed independently. Kaolin distribution and the associated inflammatory and fibrotic responses were histologically analyzed.

Evans index of ventriculomegaly showed significant progressive growth in ventricular size over all time points examined. The greatest enlargement occurred within the first 2 months. Evans index also correlated with the extent of kaolin distribution by MRI and by pathological examination at all time points. First gait changes occurred at 69 days, anxiety at 80, cognitive impairment at 81, and locomotor difficulties after 120 days. Only locomotor deterioration was associated with Evans index or the radiological evaluation of kaolin extension. Inflammatory/fibrotic response was histologically confirmed over the cranial convexities in all rats, and its extension was associated with ventricular size and with the rate of ventricular enlargement.

Kaolin injected into the subarachnoid space over the cerebral hemispheres of adult rats produces an inflammatory/fibrotic response leading in a slow-onset communicating hydrocephalus that is initially asymptomatic. Increased ventricular size eventually leads to gait, memory, and locomotor impairment closely resembling the course of human adult chronic hydrocephalus ¹⁾.

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Jusué-Torres I, Jeon LH, Sankey EW, Lu J, Vivas-Buitrago T, Crawford JA, Pletnikov MV, Xu J, Blitz A, Herzka DA, Crain B, Hulbert A, Guerrero-Cazares H, Gonzalez-Perez O, McAllister JP 2nd, Quiñones-Hinojosa A, Rigamonti D. A Novel Experimental Animal Model of Adult Chronic Hydrocephalus. *Neurosurgery*. 2016 Nov;79(5):746-756. PubMed PMID: 27759679.

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Last update: **2024/06/07 02:50**

