mouse model of schizophrenia. This study will show further insight into possible mechanisms of the Ketogenic diet for future novel therapeutics. **Method:** 36 Young-C57/BL mice were randomly assigned to either Ketogenic or Standard diet for 7 weeks. Pre-pulse inhibition of startle (PPI) testing was performed at 3 and 7 weeks after commencement of the diet. The 2 diet groups were randomly assigned to either MK-801 or saline intra-peritoneal injection 30 minutes prior to PPI tests. Food intake was recorded daily and body weight weekly. **Results:** Energy consumption between diet groups did not differ significantly. Ketogenic diet improved average PPI per cent, which was shown across different pre pulse intensities. Average PPI per cent improvement was seen at 3 and 7 weeks. **Conclusions:** Energy consumption not being significantly different indicates that animals on Ketogenic diet are not starving. Ketogenic diet reconstitutes sensory motor gating at different time-points. Ketogenic diet has a significant effect on the gold standard test for schizophrenia in an acute NMDA receptor antagonist mouse model. However, future research is needed to investigate the efficacy of Ketogenic diet in chronic animal models of schizophrenia.

The role of iron oxide nanoparticles in the diagnosis of vascular diseases: A systematic review

Faith O. Alele, Theophilus I. Emeto

Public Health and Medicine, College of Public Health, Medical and Veterinary Sciences, James Cook University, Townsville, Queensland

Background: Vascular diseases remain a cause of high patient mortality globally. Current diagnoses are often through contrast-enhanced computed-tomography or magnetic-resonance-imaging (MRI) with approximately 80% sensitivity. Iron oxide nanoparticles are increasingly used in enhancing vascular disease diagnosis due to their ability to selectively deliver imaging agents to specific locations. This article describes studies investigating the use of iron oxide nanoparticles in the diagnosis of vascular diseases in humans. **Method:** A literature search was conducted to identify studies assessing the role of nanoparticles in the management of vascular diseases using PubMed from Jan 2011 to June 2016. The following search terms were applied “vascular diseases” AND “nanoparticles”. Human studies investigating the role of nanoparticles in vascular diseases were included. Studies excluded were *ex vivo* and *in vitro* human association studies, and non-English studies. **Results:** Nine out of 179 studies met the inclusion criteria. Sample size ranged from 1 to 23 median 14, inter-quartile range (IQR, 5.5 - 20.0). Five studies reported that ultra-small super paramagnetic iron oxide (USPIO) enhanced MRI assessment of vascularity, and macrophage content in atherosclerotic carotid plaques. Three studies demonstrated that ultra-small super paramagnetic iron oxide improved MRI diagnosis of myocardial infarction and allows the detection of the peri-infarct zone. One study did not support the latter findings. **Conclusions:** Iron oxide nanoparticles are effective at improving detection and diagnosis of vascular diseases, although the long term effects of these agents are not yet known.

Overexpression of Hif2α is sufficient to generate features of renal cell carcinoma

Nasir A. Shah[1,2], Alex Sands[3], Yoshiro Maezawa[4], Joseph Ly[5], Vera Eremina[5], Susan E. Quaggin[6]

[1]*The Townsville Hospital, Townsville, Queensland*

[2]*James Cook University, Townsville, Queensland*

[3]*Mackenzie Health, Richmond Hill, Canada*

[4]*Department of Clinical Cell Biology and Medicine, Chiba University Graduate School of Medicine, Chiba University Hospital, Chiba, Japan*

[5]*The Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital, Toronto, Ontario, Canada*

[6]*Feinberg Cardiovascular Research Institute and Division of Nephrology and Hypertension, Northwestern University, Chicago, USA*

Background: Renal Cell Carcinoma (RCC) is the most common urogenital tumor, accounting for 3% of all adult malignancies, and is characterized by an increase in expression of hypoxia inducible factors (HIFs). In RCC, mutations in the VHL gene allow the HIFα subunits to escape degradation and translocate to the nucleus where they activate transcription of their target genes. Over 60 HIF target genes have been identified, which are involved in processes such as angiogenesis, erythropoeisis, glycolysis, apoptosis, and cell proliferation. Although both HIF1α and HIF2α are upregulated in RCC, it has been suggested that HIF2α plays a more critical role. **Method:** In this study we examined the contribution of HIF2α in renal tumourigenesis by generating a transgenic mouse model containing a mutated human HIF2α gene. Selective mutation of the Proline531 and Asparagine847 residues produced a stabilized HIF2α that escaped proteasomal degradation while remaining transcriptionally active. Under the control of the ROSA26, and Pax8 promoters, a reverse tetracycline-controlled system (rtTA) allowed for temporal control of whole body, and tubular-specific overexpression of HIF2α. **Results:** Increased expression of HIF2α in the renal tubular epithelium resulted in enhanced cellular proliferation, erythrocytosis, lipid-accumulation, and the rapid development of renal cysts that had lost markers of tubular epithelial differentiation – all features that are noted in the early stages of RCC. **Conclusions:** Taken together, these results suggest that HIF2α is a key player in the development of RCC, and a potential target for treatment of this disorder.