Antifibrotic properties of transarterial oncolytic VSV therapy for hepatocellular carcinoma in rats with thioacetamide-induced liver fibrosis.

Recombinant vesicular stomatitis virus (VSV) shows promise for the treatment of hepatocellular carcinoma (HCC), but its safety and efficacy when administered in a setting of hepatic fibrosis, which occurs in the majority of clinical cases, is unknown. We hypothesized that VSV could provide a novel benefit to the underlying fibrosis, due to its ability to replicate and cause cell death specifically in activated hepatic stellate cells. In addition to the ability of VSV to produce a significant oncolytic response in HCC-bearing rats in the background of thioacetamide-induced hepatic fibrosis without signs of hepatotoxicity, we observed a significant downgrading of fibrosis stage, a decrease in collagen content in the liver, and modulation of gene expression in favor of fibrotic regression. Together, this work suggests that VSV is not only safe and effective for the treatment of HCC with underlying fibrosis, but it could potentially be developed for clinical application as a novel antifibrotic agent.