

An Animal Model for the Study of Hepatic Stellate Cell and Hepatocellular Carcinoma Interaction[†]

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Abstract

The recognition of hepatic stellate cells (HSC) around and within hepatocellular carcinoma (HCC) in human livers has generated interest in the interactions between HSC and HCC. We explored the possibility of creating an animal model to allow in vivo investigations of this interaction. Eighteen adult Buffalo rats were inoculated with 1×10^6 cells obtained from cultures of Morris 7777 hepatoma cell line (ATCC). The rats were sacrificed at 2-, 3-, and 4-week intervals. Identification of activated HSC was with immunohistochemistry for α -smooth muscle actin (α -SMA). There was 100% survival of all animals until sacrifice. Tumour formation occurred in 94.4% of rats, and was of a good size by two weeks. Expression of α -SMA was observed around and within all HCC, but absent from normal tissue, and this showed colocalisation with collagen deposition. These findings are consistent with those previously reported in resected HCC in humans. The high survival, good tumour yield, consistent generation of activated HSC around the tumours, and similarities in histological appearance to the human HSC-HCC distribution pattern, make this a reliable animal model for in vivo studies on HSC-HCC interaction.

Ann Acad Med Singapore 1999; 28:95-8

Key words: Ito cell, Liver cancer, Morris hepatoma, Rat model