Chemically Induced Breast Tumors in Rats are Detectable in Early Stages by Contrast Enhanced Magnetic Resonance Imaging but Not by Changes in the Acute-Phase Reactants in Serum

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Abstract: The present study was undertaken to develop a rat model for monitoring the early development of breast cancer. Twelve female rats were divided into two groups of six rats that were either treated with N-methyl-N-nitrosoare to induce breast cancer or with bacterial lipopolysaccharide to induce inflammation. Serum samples taken from the rats prior to the treatment were used as controls. By the 14th week, presence of the tumor was detectable by contrast enhanced magnetic resonance imaging and confirmed by histopathology. When the serum proteins of the rats were examined by 2-dimensional electrophoresis (2-DE), no difference could be detected in the profiles of all proteins before and 18 weeks after administration of N-methyl-N-nitrosoare. However, higher expression of alpha-1B glycoprotein was detectable by 2-DE in serum samples of rats at the 18th week post-treatment with lipopolysaccharide.

Keywords: acute-phase response; breast cancer; proteomics; magnetic resonance imaging