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Thermography use as a predictive tool in early diagnosis of breast cancer

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The aim of our study was to find out whether thermography (TG) could be used as a predictive method for early diagnosis of breast cancer (BC). BC was induced with 2 doses of N-methyl-N-nitrosourea (50 mg/kg body weight) to 20 female Sprague Dawley rats. Animals were maintained in temperature-controlled room (22°C) for 15 minutes and then imaged using digital infrared camera (FLIR E40, FLIR Systems OÜ, Estonia). Anesthetized rats (isoflurane, 2ml/L of induction chamber volume) were positioned in front of uniform pad and thermographic images were obtained in 0.5 meter from rats. Images were analyzed by software program (FLIR Tools version 2.0, FLIR Systems, Inc., Wilsonville, USA). Symmetrical body areas were monitored to detect temperature patterns of intact breast in compare to potential affected one. Only tumors developing non-parallel were further evaluated. The predictive role of TG has been monitored and evaluated two weeks before tumor appearance. Rats developed 30 evaluable breast tumors – ductal forms (20), papillary forms (9), and hyperplasia (1). Hyperplasia was accompanied by the raising temperature up to 0.2°C two weeks before the palpation. Interestingly, almost all papillary forms of breast tumors (8/9) were characterized by elevated temperature up to 1.1°C. Nonetheless, 11 ductal carcinomas (55%) were characterized by the increased temperature of 0.6±0.3°C. In 7 cases, temperature sank by 0.5±0.3°C. Two tumors showed no differences in body temperature before manifestation. TG could be used as an effective noninvasive predictive tool in BC diagnosis. However, more studies are required to describe the potential of this predictive method.

Biography

Terezia Kiskova has completed her PhD in 2012 at the University of Pavol Jozef Safarik in Kosice, Slovakia. During her postdoctoral study she studied at Medical University of Vienna. During this period, she has actively created scientific lectures for children and adolescents (Night of Researchers, Day of Science and Research). She has published more than 13 papers in reputed journals. This year, she has won the Competition of Young Oncologists in Slovakia.

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