

Termiczna ocena efektów brachyterapii i terapii fotodynamicznej w leczeniu raka podstawnokomórkowego skóry

In the 21st century, thermography is rapidly gaining popularity in many fields, particularly in medicine. Thermal imaging is a safe and non-invasive method that offers great potential for obtaining additional information in the diagnosis and observation of cancerous lesions (particularly aggressive lesions). These lesions are characterised by enhanced metabolism which translates into increased temperature in the lesion area. This thesis is concerned with the thermal analysis of skin lesions caused by basal cell carcinoma (BCC) together with the thermal effects caused by treatment with photodynamic therapy and brachytherapy. For the study to evaluate the thermal effects of PDT in the treatment of BCC, temperature analyses were performed for the area of the tumour lesion. A statistically significant increase of several times the area determined by isotherms was obtained as early as 5 minutes after the start of treatment in relation to the area originally considered as a cancerous lesion. The results obtained may suggest a greater extent of carcinogenic processes than assumed. For the study to evaluate the thermal effects of brachytherapy, temperature analyses were carried out for the area of the cancerous lesion together with the surrounding healthy tissue and a reference area, which was defined as an area placed symmetrically with respect to the midline of the body. Analysis of the data showed the existence of two types of thermal response of the tissues. At present, there is no answer as to how the data obtained may affect clinical practice. The use of infrared thermography as a fast and safe imaging method for patients with cancerous lesions on the surface of the body offers the possibility of obtaining additional information that can assist in therapy planning. Thermal imaging also provides the opportunity to some extent for local control of cancerous lesions.

Keywords: thermography, photodynamic therapy, HDR brachytherapy, basal cell carcinoma