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Is there a specific magnetic resonance phenotype characteristic of hereditary breast cancer?

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ABSTRACT

Aims and background. The aim of the study was to investigate the growth rate of inherited breast cancer, to analyze its T2 signal intensity besides kinetic and morphologic aspects, and to verify whether there is any correlation between magnetic resonance imaging phenotype and BRCA status.

Methods. Between June 2000 and September 2009, we enrolled 227 women at high genetic risk for breast cancer in a surveillance program, within a multicenter project of the *Istituto Superiore di Sanità* (Rome).

Results. Thirty-four cancers were detected among 31 subjects. One patient refused magnetic resonance imaging because of claustrophobia. Compared with sporadic disease, hereditary cancer showed some differences, in terms of biologic attitude and semeiotic patterns. These differences were mainly registered for magnetic resonance imaging, where the most frequent radiological variant was represented by the very high T2 signal intensity (73%). Moreover, the size of 8 of the neoplasms showed a significant increase in less than one year, 5 of them in less than 6 months. Six lesions were in BRCA1 patients and the remaining in BRCA2. Furthermore, cancers with a high growth rate also demonstrated a significant increment in T2 signal intensity.

Conclusions. Our results confirmed the high growth rate within BRCA-related breast cancers, especially for BRCA1 mutation carriers. In our experience, we found a specific imaging phenotype, represented by the high T2 signal intensity of hereditary breast cancer. To our knowledge, this is the first report that points out this new semeiotic parameter, which is usually typical of benign lesions. Considering the correlation between high growth rate and high T2 signal intensity, the former seems to be related to the absence of induction of a desmoplastic reaction that could somehow restrict cancer growth. Free full text available at www.tumorionline.it

Key words: breast cancer, BRCA mutation, growth rate, magnetic resonance imaging, T2 signal intensity.

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