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Study of ER, HER2 and CK5/6 Tissue Tumor Markers and Mutation Screening of BRCA2 Gene in Iranian Males with Breast Cancer

Kadkhoda S, Zorrie Zahra A, Behjati F, Najmabadi H, Aghakhani Moghaddam F, Badiee A: Genetics research Center-University of Social Welfare and Rehabilitation Sciences-Tehran Iran

Sirati F: Cancer Institute, Surgery Department, Tehran University of Medical Sciences, Tehran, Iran

Afshin Alavi H: Pathology Department, Day Hospital, Tehran, Iran

Atri M: Cancer Institute, Surgery Department, Tehran University of Medical Sciences, Tehran, Iran

Omranipoor R: Cancer Institute, Surgery Department, Tehran University of Medical Sciences, Tehran, Iran

Keyhani E*: Genetics research Center-University of Social Welfare and Rehabilitation Sciences-Tehran Iran

Corresponding Author: Elahe Keyhani, ekeyhani1058@gmail.com

Abstract

Introduction: Male Breast Cancer (MBC) is a rare disease accounting for 1% of all breast cancer cases. Literature review reveals no researches about male breast cancer in Iran. More attention is necessary because the disease has an increasing trend. The aim of this study is to screen mutations in BRCA2 gene and its possible relationship with ER, HER-2 and CK5/6 tissue markers in order to increase motivation for better perception about male breast cancer.

Methods: In this study, ten Iranian males with breast cancer, regardless of histologic subtypes, age and family history, were selected from the referred cases to Mehrad, Day and Parsian hospitals in Tehran. Paraffin blocks from the tumoral region were sectioned and they were undergone ER, HER-2 and CK5/6 immunostaining. Also sections for hematoxyllin and eosin staining were prepared. For confirming HER-2 positive (score +2) samples, which were assessed by immunohistochemistry, FISH technique was also performed.
Blood samples were taken and their DNA was extracted with salting out method, and the qualities of DNA were measured via spectrophotometery. Appropriate primers of BRCA2 gene to perform PCR were designed and DNA underwent amplification and electrophoresis with suitable temperature condition and the products were sequenced by Sanger sequencing method.

Results: ER in 2 out of 10 patients and HER-2 and CK5/6 in all of the cases were negative. One nonsense mutation in exon 25 of BRCA2 was found in only one of the patients. This mutation was confirmed to be pathogenic via BIC ،HGMD, Mutation taster and Provean sites.

Conclusion: Despite low number of patients in this study which is a reflection of the rarity of the disease and according to the other studies in another countries, it could be concluded that most of the male breast cancer cases could be categorized in luminal A subtype and the negativity of the tissue markers can't be used for the prediction of BRCA2 mutations. Educating the general public for early diagnosis of this type of cancer in men and as a result raising their awareness into this disease and also promoting the quality of diagnostic methods in Iran are necessary. As well, wider researches along with this study with more cases are suggested to be performed.

Keywords: Male Breast Cancer (MBC), BRCA2, ER, HER-2, CK5/6.

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