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BRCA: Gene mutations in breast cancer
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Abstract

Breast cancer reportedly has the highest incidence in Malaysia, and this is despite the availability of screening facilities nationwide. Many gene mutations have been linked to the hereditary nature of the cancer, and the most common are mutations in BRCA1 and BRCA2 genes. These two have an important role in repairing damaged cells, thus ensuring normal growth of breast, ovarian and other tissues. However, problems arise when these genes mutate and lose their functions, which are then passed down to the offspring, thereby increasing the risk of generational cancers. The risk of developing breast cancer may be as high as 72% in women with BRCA1 or BRCA2 mutations. Conventional treatments for breast cancer include surgery, radiotherapy, chemotherapy and anti-hormone medication. The use of olaparib and talazoparib, which are polyadenosine diphosphate (ADP)-ribose polymerase (PARP) inhibitors, have been studied. The clinical trials of these drugs have reached phase III with improvements seen in patient survival. The main challenge is the development of resistance towards treatment. Therefore, researchers have looked into the combined use of olaparib with standard therapies, as well as the antibiotic Novobiocin either alone or together with PARP inhibitors to reduce the risk of the cancer becoming resistant to treatment. Therefore, a better understanding of the role of BRCA1 and BRCA2 in breast cancer is vital to produce an effective treatment plan. © 2023 Nova Science Publishers, Inc. All rights reserved.

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