Importance of breast cell membrane components for cancer development

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In a recent Editorial of the journal "Menopause" it has been suggested that the observed increase in breast cancer risk using hormone therapy in the combined arm of the Women's Health Initiative study could probably be explained by overexpression of a special receptor i.e. the progesterone receptor membrane component-1 (PGRMC1). The expression of PGRMC1 in the malignant tissue of breast cancer patients has been shown to be significantly higher compared to their normal mammary glands. We could demonstrate that certain synthetic progestins can increase the proliferation of PGRMC1-overexpressing breast cancer cells in vitro and also in animal models and may thus be involved in tumorigenesis, while progesterone and certain synthetic progestins such as nomegestrol react neutral. Thus activation of PGRMC1 may explain the increased breast cancer risk observed during treatment with certain progestogens. Very recently PGRMC1 could be found also in the serum samples of lung cancer patients, and matched to healthy women showing significant higher concentrations in the cancer patients. Therefore screening for PGRMC1 might be a predictor of breast cancer risk during hormone therapy or contraception as well as for the risk of other cancers.

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