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Extended Abstract

Non-invasive diagnosis of breast disease by analysis of characteristic hormone ratios

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Abstract

There is increasing interest in the development of noninvasive diagnostic methods for early breast cancer detection to improve the survival rate and minimize the pain of diagnosis. Common methods for diagnosis and surveillance include mammography, histopathology and blood tests. The major drawbacks of these methods involved high rate of false reports, time consuming and poor specificity. Identification of characteristic compounds by using high resolution mass spectrometer may provide a powerful approach for diagnosis of breast cancer. Here, a new noninvasive method was developed for fast screening breast disease. The hormones, which were collected by scrubbing the surfaces of armpit and nipple with alcohol swabs, were analyzed by Orbitrap mass spectrometry. The obtained mass spectra were subsequently treated statistically to identify discriminating hormones between normal vs. breast disease (breast lesions and breast cancer) patients. We found that the ratios of some hormones including progesterone to testosterone and estrogens to testosterone changed significantly among different breast diseases. The changes in some typical hormone ratios which were produced by the glands of the armpit and nipple will reflect the health status of breast and relate to the female breast disease. This method offers considerable potential as a noninvasive strategy to screen early breast cancer.

Biography

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