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生物統計学分野 博士課程 1 年 田中晴菜

Metabolomics as Pre-diagnostic Biomarkers in Female Breast Cancer with low and high Mammographic Breast Density (MBD)

Breast cancer is the most prevalent cancer among women worldwide. Mammographic breast density (MBD), which represents the proportion of dense tissue in the breast as assessed by mammography, has been established as a significant independent risk factor for breast cancer[1,2]. Epidemiological studies consistently report that women in the highest quartiles of MBD exhibit a 3–5-fold increased risk of breast cancer compared to those with low MBD[2]. Moreover, high MBD is associated with reduced mammographic sensitivity, often resulting in delayed diagnoses and the detection of cancer at more advanced stages.

Advances in metabolomics have recently highlighted circulating metabolites as promising pre-diagnostic biomarkers, providing novel insights into the mechanisms of cancer development and progression. Despite this progress, the relationship between MBD and metabolomic profiles remains insufficiently understood. This presentation will first introduce a collaborative study conducted between St. Luke's International Hospital and the WHO, aimed at introducing the study objectives and designs. Subsequently, findings from prior research investigating differences in pre-diagnostic metabolomic profiles between breast cancer cases with low and high MBD will be discussed. This work aims to identify MBD-related pathways and biomarkers, focusing on strategies to enhance predictive and preventive approaches tailored to individual risk profiles.

References

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2. MCCORMACK VA, DOS SANTOS SILVA I. Breast density and parenchymal patterns as markers of breast cancer risk: A meta-analysis. *Cancer Epidemiology, Biomarkers & Prevention*. 2006;15(6):1159–1169.