

## Correlation between residual microcalcifications after neoadjuvant systemic therapy and histological tumor size

Chikako Sekine<sup>1)2)</sup>, Kazumi Kawase<sup>1)</sup>, Kazuhiko Yoshida<sup>1)</sup>, Koichi Nomura<sup>3)</sup>

- 1) The Department of Surgery, The Jikei University Katsushika Medical Center, Tokyo, Japan
- 2) Department of Breast Surgery, International University of Health and Welfare, Narita Hospital, Chiba, Japan
- 3) The Division of Diagnostic Pathology, The Jikei University Katsushika Medical Center, Tokyo, Japan

### Introduction

Neoadjuvant systemic therapy (NST) is a well-established treatment for early breast cancer and has the potential to enable breast-conserving surgery by reducing tumor size and evaluating real-time sensitivity to treatment. After NST, calcifications can affect the determination of the tumor excision range. We aimed to examine the correlation between the extent of calcifications on mammography (MG) and pathological tumor size and analyze the effect of calcifications on the determination of the excision range.

### Materials and methods

Of 325 patients who underwent surgeries after NST between January 2012 and June 2020, the medical data of 45 patients with calcifications on MG before NST were reviewed. Calcification changes and tumor characteristics were analyzed.

### Results

Five patients (11.1%) achieved a pathological complete response (absence of invasive and non-invasive cancer cells). After NST, the range of calcification decreased in 57.8%, remained stable in 31.1%, and increased in 4.4% of patients. The calcification range after NST correlated with the pathological non-invasive tumor size ( $p=0.033$ ). However, it did not correlate with the pathological invasive tumor size ( $p=0.16$ ).

Calcification changes were not associated with hormone receptor positivity ( $p=0.69$ ), human epidermal growth factor receptor 2 positivity ( $p=0.93$ ), or clinical tumor size ( $p=0.29$ ). In addition, there were no relationships among calcification changes, local recurrence ( $p=0.60$ ), and overall survival ( $p=0.30$ ).

### **Conclusion**

Calcification size was significantly related to non-invasive tumor size after NST. This study was a retrospective study with a small sample size. Nevertheless, it is suggested that carefully analyzed calcifications should be included in the excision range after NST.