



## **THE ROLE OF THE ANDROGEN RECEPTOR IN PRIMARY BREAST CANCER IN OLDER WOMEN**

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**INTRODUCTION:** Breast cancer in older women has more favourable biology, compared to their younger counterparts. The role of the oestrogen receptor (ER) in primary endocrine therapy is well recognised. Androgen receptor (AR) is significant for breast tumour carcinogenesis and the expression of AR is lower in ER negative tumours, however its role specifically in older women with breast cancer has not been fully explored.

**OBJECTIVES:** This study aimed to investigate the role of AR in breast cancer in older women as a possible prognostic marker.

**METHODS:** Surgical specimens were obtained from an existing series of 1,758 older women ( $\geq 70$  years) with primary breast cancer, treated in a single institution with long-term (37+ years) follow-up. Of this cohort, 813 underwent primary surgical treatment. As part of previous work, it was possible to construct good quality tissue microarrays (TMAs) in 509 cases on which ER positivity had already been measured.

Immunohistochemical staining for AR was performed and assessed on these TMAs. AR positivity was defined as H-score  $\geq 40$ . This data was compared to an equivalent group of younger women ( $< 70$  years,  $n=1,708$ ). Breast cancer specific survival (BCSS) was calculated. Prognostic significance of AR status was compared using the Kaplan-Meier method.

**RESULTS and CONCLUSIONS:** In the cohort of older women, AR positivity was 59% compared to 63% in the younger cohort. This was not a statistically significant difference.

AR positivity overall (regardless of age) was associated with lower grade of tumour ( $p < 0.001$ ), lower mitotic frequency ( $p < 0.001$ ) and ER positivity ( $p < 0.001$ ).

Patients with AR-positive tumours in older women were associated with better BCSS compared to AR-negative tumours ( $p = 0.009$ ).

There was no difference in AR expression between older and younger women with breast cancer, however, AR has prognostic potential in terms of BCSS. Further work is needed to investigate AR as a therapeutic target.

**Keywords:** androgen receptor, primary breast cancer, older women