Editorial Commentary

Anatomy is not enough: the crucial role of biology and genetics in AJCC eighth edition of the TNM classification for breast cancer

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Comment on: Kim JY, Lim JE, Jung HH, *et al.* Validation of the new AJCC eighth edition of the TNM classification for breast cancer with a single-center breast cancer cohort. Breast Cancer Res Treat 2018;171:737-45.

Submitted Feb 13, 2019. Accepted for publication Feb 15, 2019.
doi: 10.21037/atm.2019.02.12
View this article at: http://dx.doi.org/10.21037/atm.2019.02.12

The eighth edition of the AJCC-TNM staging system could be read as the expression of growing scientific tendency to a more personalized approach to cancer diagnosis and treatment. The signs of this significant cultural propensity were already present since first passes in cancer staging definition in 1959 (1).

The editors of the second edition in 1983 had already clearly outlined the intent of the scientific research in this sense: "*At the present time, the anatomic extent of the cancer is the primary basis for staging; the degree of differentiation of the tumor and the age of the patient are also factors in some cases. In the future, biologic markers and other factors may also play a part.*" (1,2).

The present scientific reality does not betray this "visionary" comment: passing through a staging purely based on anatomical parameters, now prognostic value of every single clinical case is based on the scientific finding that breast cancer with the same pathological stage, according to the 7th edition, but with different HR and HER2 status presents different prognosis (3,4). With focus on identification of more selected and individualized therapy for a better outcome, the 8th edition staging system combines to anatomical features, biological tumor factors, such as hormonal receptors status, nuclear grade, HER2 status. The contribute of gene expression prognostic panel is also recommended, where available, in particular oncotype DX for patients with T1–2, N0, M0, ER positive, HER2 negative disease (5).

Several scientific contributions are recently added, particularly in the guise of retrospective studies or prospective database studies, aimed to analyse and verify the accuracy and validity in clinical practice of this last AJCC TNM edition staging system (5-8).

Kim *et al.* (8) in their recent retrospective analysis, study survival rates of large cohort of women (n=2,790) with stage I, II, or III breast cancer, who underwent breast surgery, with a median follow-up of 116.2 months: comparing 10-year disease-specific survival (DSS) rates based on AJCC 7th edition criteria with same data applying 8th edition criteria, they confirmed a more accurate stratification in 8th staging. With an up-staging from 7th to 8th edition observed in 968 breast cancer patients (34.7%) and down-staging in 654 (23.4%), the study demonstrates the prognostic benefit of immunochemistry and of biological specific factors in staging breast cancer, therefore validating the AJCC 8th edition of TNM classification.

A possible limitation of the study could be the oncological undertreatment in the HER2 positive subpopulation (260 HR+/HER2+ and 302 HR–/HER2+): as underlined by Authors, this cohort of patients undergone to breast surgery had not all submitted to complete adjuvant systemic treatment. In particular, the authors specified that HER2 positive cases were not treated with HER2-targeted therapy (because not reimbursed in Korea in the analysed period of study), even if they asserted the relative homogeneity of treatments in breast cancer patients studied, confirming the scientific validity of the population and the more accurate prognostic value of the new staging system.

The scientific perspective for the future in cancer staging should look to insertion of other important biological factors and to progressive greater accessibility to other genomic panels.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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Cite this article as: Magnoni F, Accardo G, Rossi E, Veronesi P, Corso G. Anatomy is not enough: the crucial role of biology and genetics in AJCC eighth edition of the TNM classification for breast cancer. Ann Transl Med 2019;7(Suppl 1):S34. doi: 10.21037/atm.2019.02.12

