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Guiding the Axilla: Combining SUVmax and Monocytes to Predict Response to Neoadjuvant Therapy in HER2 positive Breast Cancer

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Introduction

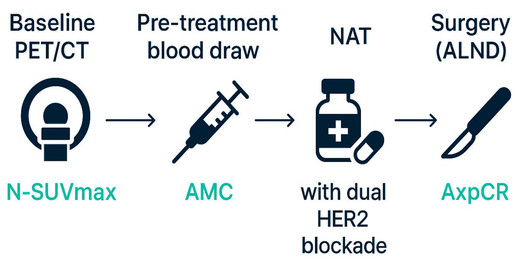
- Axillary pathologic complete response (AxpCR) is a strong prognostic marker in HER2-positive breast cancer.
- Reliable **pre-treatment predictors** of AxpCR remain limited.
- Identifying patients likely to achieve AxpCR may support **axillary de-escalation strategies**

AIM

To evaluate whether **baseline N-SUVmax** (from 18F-FDG PET/CT) and **absolute monocyte count (AMC)** predict **AxpCR** after neoadjuvant therapy in HER2-positive cN+ breast cancer.

Materials and Methods

Retrospective analysis of HER2-positive cN+ breast cancer patients treated with standardized neoadjuvant chemotherapy (NAT) and dual HER2 blockade



- AxpCR defined as **no metastatic axillary involvement at surgery**.
- ROC curves used to identify optimal cut-offs

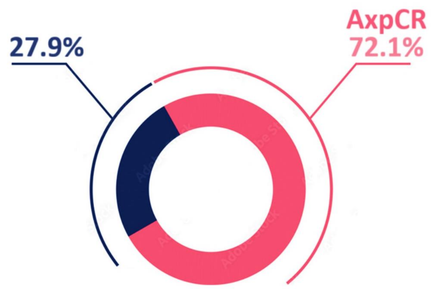
Conclusions

Together, N-SUVmax and monocyte count offer a clearer way to anticipate AxpCR and guide more thoughtful, individualized axillary care.
Predict better. Treat smarter.

No conflict of interest.
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Results

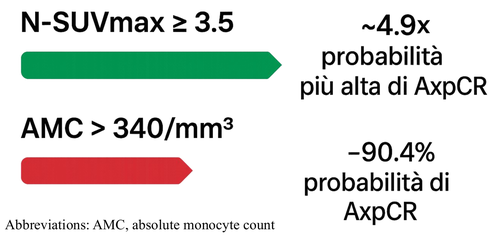
A Axillary Response: Rates after NAT



Proportion of patients achieving AxpCR after NAT. Among 215 HER2-positive cN+ patients, 155 (72.1%) achieved AxpCR following treatment with chemotherapy plus dual HER2 blockade.

Abbreviations: AxpCR, axillary pathologic complete response; NAT, neoadjuvant therapy

B Impact of AMC and N-SUVmax: Predictive Significance



Abbreviations: AMC, absolute monocyte count

Multivariable logistic regression showing predictors of AxpCR. High N-SUVmax (≥3.5) was associated with significantly increased odds of AxpCR, while elevated AMC (>340/mm^3) and risk groups with combined unfavorable biomarkers showed markedly reduced odds.

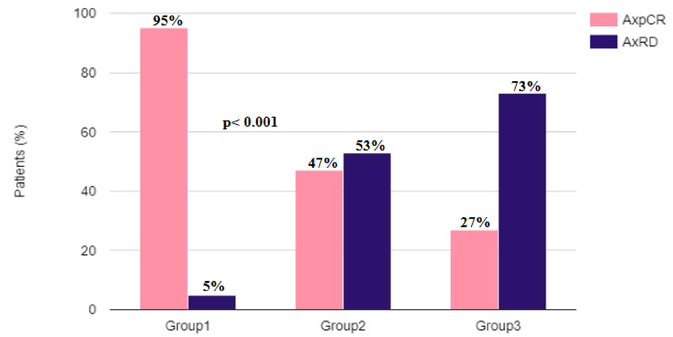
C N-SUVmax x AMC Interaction

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
AMC	,004	,003	1,733	1	,188	1,004	,998	1,011
LMr	,388	,187	4,298	1	,038	1,474	1,021	2,126
N-SUVmax	,769	,279	7,624	1	,006	2,158	1,250	3,726
AMC by N-SUVmax	-,001	,001	7,476	1	,006	,999	,997	1,000
Constant	-4,178	2,206	3,589	1	,058	,015		

Higher N-SUVmax values were significantly associated with increased odds of AxpCR (p = 0.006; OR = 2.158 [1.250–3.726]). A significant interaction between N-SUVmax and AMC further demonstrated that elevated AMC levels attenuated the positive effect of N-SUVmax on AxpCR (p = 0.006; OR = 0.999 [0.997–1.000]).

D AxpCR probabilities across predictive groups



Patients were categorized based on N-SUVmax values as ≥3.5 or <3.5 and AMC levels as >340/mm3 or ≤340/mm3.

Given the strong predictive performance of N-SUVmax and AMC, patients were stratified using N-SUVmax (≥3.5 vs <3.5) and AMC (>340/mm³ vs ≤340/mm³), yielding three biomarker-defined risk groups. Group 1: High N-SUVmax - Low AMC; Group 2: High N-SUVmax - High AMC or Low N-SUVmax - Low AMC; Group 3: Low N-SUVmax - High AMC.

E Risk Grouping Model

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower	Upper
G1			17,152	2	<,001			
G2	-3,049	,821	13,777	1	<,001	,047	,009	,237
G3	-4,103	1,080	14,426	1	<,001	,017	,002	,137

Group 1 was used as the reference category to assess differences across groups. Compared with Group 1 (High N-SUVmax / Low AMC), patients in the Low N-SUVmax / High AMC group showed a markedly reduced likelihood of achieving AxpCR (p < 0.001; OR = 0.017 [0.002–0.137]). Similarly, patients in Group 2 also had significantly lower odds of AxpCR (p < 0.001; OR = 0.047 [0.009–0.237]). Both comparisons demonstrated strong statistical significance (p < 0.001).

All patients signed informed consent for publication