IMPACT OF EARLY MAGNETIC RESONANCE IMAGING ASSESSMENT ON PREDICTION OF PATHOLOGIC COMPLETE RESPONSE AND LONG-TERM OUTCOMES IN TRIPLE-NEGATIVE BREAST CANCER TREATED WITH NEOADJUVANT PEMBROLIZUMAB PD6-02

A. Carrasco Navas[1], O. Cano i Cano[1], M. Seguí Palmer[1], E. Dalmau Portulas[1], P. Andreu Cobo[1], M. Costillas Frías[2], M. Medarde Ferrer[3], A. López Mestres[4], N. F. Papaleo[5], M. Busquets Godall[1], M. Fragío Gil[1], M. Sierra Boada[1], A. Ribas Bravo[1], O. Civit Figueras[1], C. Victoria Marin[1], J. Sandoval Alves[1], M. Monroe Rivera[1], I. Gallego Bernardo[1], L. Fernández Morales[1]

[1]Medical Oncology, Hospital Universitario Parc Taulí, Sabadell, SPAIN, [2]Breast Imaging Department, Hospital Universitario Parc Taulí, Sabadell, SPAIN, [3]General Surgery Department, Hospital Universitario Parc Taulí, Sabadell, SPAIN, [4]Gynecology Department, Hospital Universitario Parc Taulí, Sabadell, SPAIN, [5]Anatomic Pathology Department, Hospital Universitario Parc Taulí, Sabadell, SPAIN.

Introduction

Previous studies have suggested that radiological complete response (rCR) to neoadjuvant chemotherapy (NAC), assessed by magnetic resonance imaging (MRI), may predict pathologic complete response (pCR) in patients with operable triple-negative breast cancer (TNBC) treated with anthracycline (AC) and taxane (TX)-based regimens.

At our institution, serial MRI assessments are routinely performed before NAC, mid-treatment, and prior to surgery. (Figure 1)

In this study, we aimed to assess the predictive value of MRI response in patients receiving a novel NAC regimen including pembrolizumab and its correlation with pCR.

We additionally compared this group to an historical cohort treated with standard NAC, to evaluate whether the addition of pembrolizumab (pembro) improves pCR rates, as well as long-term outcomes such as overall survival (OS) and event-free survival (EFS).

Methods and Materials

We retrospectively analyzed 162 patients with stage II–III TNBC treated with neoadjuvant chemotherapy.

Patients were divided into two cohorts:

•**Cohort 1** (n = 140): historical group (2000–2024) treated with sequential anthracycline → taxane regimens ± carboplatin.

•**Cohort 2** (n = 22): KEYNOTE-522–based regimen (carboplatin + paclitaxel + pembrolizumab → anthracycline + pembrolizumab).

MRI assessments were performed at baseline, mid-treatment, and pre-surgery. rCR was defined as no/minimal enhancement comparable to normal tissue (Figure3); pCR as absence of invasive tumor in breast and axilla. Associations between rCR and pCR were analyzed with chi-square/Fisher tests. Survival outcomes (OS, EFS) were estimated by Kaplan-Meier and compared with log-rank test ($p < 0.05$).

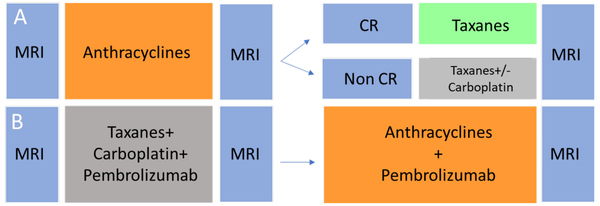


Figure 1. Flowchart of neoadjuvant treatment in patients with TNBC, Cohort 1 (A), Cohort 2(B).

Results

A total of 162 TNBC patients were included. Median age at diagnosis was 52 years (range 28–77). Most patients had stage III disease (97.5%, AJCC 8th edition).

The overall pCR rate (breast and axilla) was 44.4%, significantly higher in cohort 2 vs. cohort 1 (68.2% vs. 40.7%, p=0.016).

Early rCR on MRI was achieved in 28.6% of patients overall, significantly more frequently in cohort 2 (66.6% vs. 22.7%, p<0.001).

Final rCR on MRI was achieved in 43.8% of patients overall (61.9% in cohort 2 vs. 40.8% in cohort 1, p=0.121). (Figure 2)

	TOTAL	COHORT 1	COHORT 2	P VALUE
Overall pCR rate	44.4%	40.7%	68.2%	0.016
Early rCR on MRI	28.6%	22.7%	66.6%	<0.001
Final rCR on MRI	43.8%	40.8%	61.9%	0.121

Figure 2. Rates of pCR, early rCR, and final rCR analyzed by cohort

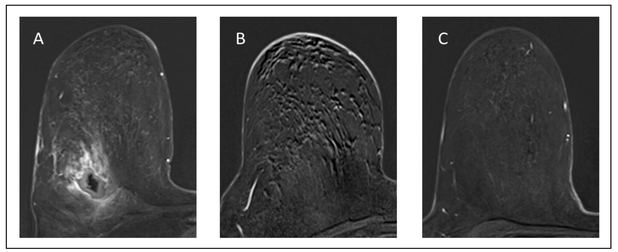


Figure 3. Serial magnetic resonance imaging before treatment (A), after Carboplatin+Taxanes+Pembro (B) and at the end of Anthracyclines+Pembro (C).

Among patients with early rCR (n=44), 84.1% achieved pCR (83.3% in cohort 1 vs. 85.7% in cohort 2). For those with rCR prior to surgery (n=64), the pCR rate was 82.8% (78.4% in cohort 1 vs. 100% in cohort 2) (Figure 4).

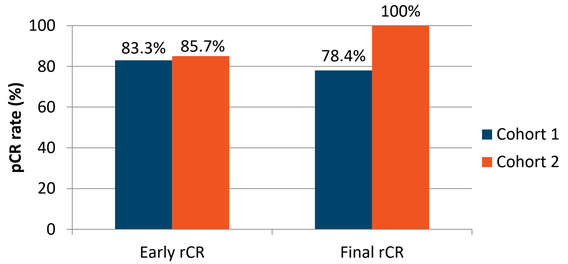


Figure 4. Correlation between radiologic and pathologic CR by MRI timing and cohort

At 5 years, OS was 81% and EFS 79% for the overall cohort.

Patients with pCR had significantly improved outcomes: (Figure 5)

- OS: 98.5% vs. 66.5% in non-pCR (p<0.001)
- EFS: 96.7% vs. 64.4% in non-pCR (p<0.001)

Similarly, patients with early rCR had superior 5-year outcomes: (Figure 6)

- OS: 100% vs. 71.6% in non-responders (p<0.001)
- EFS: 100% vs. 70.5% in non-responders (p<0.001)

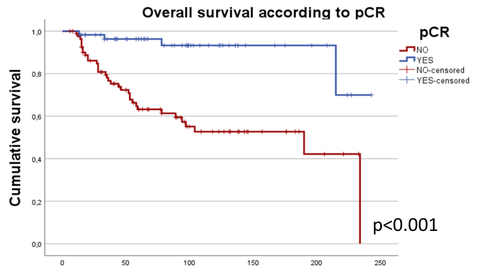


Figure 5. Overall survival (months)

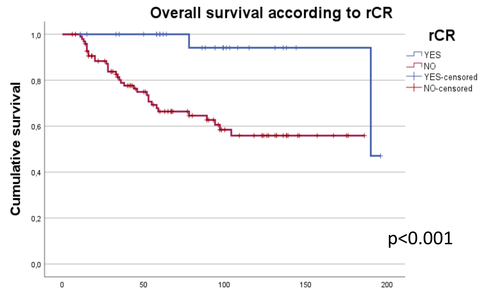


Figure 6. Overall survival (months)

Conclusions

- In TNBC, adding pembrolizumab to NAC significantly increases early radiological and pathological complete response rates.
- Serial MRI during neoadjuvant treatment are good predictors of pCR, correlating with improved long-term outcomes.
- The significant association between early rCR and pCR may serve as a non-invasive biomarker to guide therapeutic decisions and could be studied as a tool to de-escalate NAC especially in patients with comorbidities, older age or at high toxicity risk.

Contact

Alicia Carrasco Navas
Parc Taulí Hospital Universitari. Institut d'Investigació I Innovació Parc Taulí I3PT. Universitat Autònoma de Barcelona. Sabadell, Spain.
Email: acarrascon@tauli.cat
Phone: +34 681359786

References

1. **Schmid P, Cortes J, Dent R, et al.**
Event-free survival with pembrolizumab in early triple-negative breast cancer.
N Engl J Med. 2022;386(6):556–567.
2. **Bannas P, et al.**
Value of MRI for predicting pathologic complete response after neoadjuvant chemotherapy in breast cancer patients: a systematic review and meta-analysis.
Breast Cancer Res Treat. 2010;124(3):693–712.

This presentation is the intellectual property of the author/presenter. Contact them at acarrascon@tauli.cat for permission to reprint and/or distribute.

© Poster Template by Genigraphics® 1.800.790.4001 www.genigraphics.com