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Real-world PARPi treatment patterns and outcomes among patients with metastatic breast cancer.

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Background: PARP inhibitors (PARPi) improves PFS among patients (pts) with HER2-ve metastatic breast cancer (MBC) and a BRCA1/2 mutation compared to physician choice of chemotherapy. The objective of this retrospective analysis was to look at the prognostic outcome associated with the use of PARPi therapy among pts with MBC in the real world setting. **Methods:** We utilized a federated network of de-identified health data representing approximately 84 million pt lives available through the TriNetX Research Network. We identified 767 pts with MBC treated with a PARPi. Overall survival (OS) was computed using the Kaplan Meier product limit method. Propensity score matching was performed on all comparisons of OS. Matching variables included age groups, prior platinum therapy, prior genitourinary malignancies, and secondary metastasis location. **Results:** Mean age was 56.3yrs. 718 pts had HER2- disease and 49pts had HER2+ disease. Median OS was 55.0m and 44.4m among pts with HER2- and HER2+ disease respectively. Median OS among was 58.3m and 48.6m among patients with HR+/HER2- and TNBC respectively($p = 0.18$). Among pts with HR+/HER2- disease, 50.2% received PARPi in combination with endocrine therapy and 43.5% received CDK4/6i. Median OS among pts who received CDK4/6i + endocrine therapy prior to a PARPi and those that never received a CDK4/6i was 55.1m and 36.9m, respectively($p = 0.01$). Among pts with TNBC, median OS among those that received PARPi prior to chemotherapy compared to those who received PARPi after chemotherapy was 52.5m and 47.6m respectively ($p = 0.97$). 169 HER2- pts had brain metastases. Median OS among pts who had brain metastases was 36.9m among pts with HR+/HER2- disease and 22.5m among pts with TNBC($p = 0.01$). Among pts with no brain metastases, median OS was 60.6m among pts with HR+/HER2- disease and 56.3m among pts with TNBC($p = 0.91$). Median OS among pts who were rechallenged with a PARPi compared to those who were not rechallenged with a PARPi was 58.3m vs 42m respectively ($p = 0.05$). **Conclusions:** To our knowledge this is the first data set to report activity of CDK4/6i among pts with HR+/HER2- MBC who received a PARPi, with an observed 18m OS advantage compared to pts who did not receive a CDK4/6i. In absence of brain metastases OS of pts with TNBC and HR+/HER2- is similar when treated with a PARPi. Research Sponsor: None.

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