Tumor molecular profiling is often performed in order to direct cancer treatment options. However, because many of the genes analyzed on tumor molecular profiling overlap with genes known to be associated in the germline with hereditary cancer predisposition syndromes, tumor molecular profiling can unknowingly uncover germline predisposition to cancer development. In this study, we determined the number of patients with pathogenic variants (PVs) identified in BRCA1 and BRCA2 (BRCA1/2) via FoundationOne tumor molecular profiling at MD Anderson Cancer Center, then performed a retrospective chart review to determine the proportion of such patients that received germline testing and had germline PVs identified. We found that 3.78% (13/2,990; 95% CI 3.09-4.46%) of tumor-only testing reports identified PVs in BRCA1/2, 38.94% (44/113; 95% CI 29.95-47.93%) of patients with pathogenic variants in BRCA1/2 had germline testing, and 63.64% (28/44; 95% CI 49.42-77.85%) of patients with germline testing had germline PVs in BRCA1/2. Patients with cancer diagnoses related to BRCA1/2 were more likely to have had germline testing (72.73% of patients with testing had HBOC-related tumors vs. 36.23% of those without testing, p <0.001). Efforts to improve testing yield should focus on increasing awareness and availability of germline testing for advanced cancer patients with tumor-identified BRCA1/2 mutations in non-BRCA1/2 associated cancer types.

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