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The Impact of Foundation Medicine Testing in Cancer Management: A Single European Center Experience †

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Abstract: Along with the technological progress and the rapidly expanding knowledge in genomic, transcriptomic, and proteomic fields, the concept of precision medicine is more frequently found in current oncological practice. Based on Next Generation Sequencing (NGS), Foundation Medicine (FM) testing provides a comprehensive genomic profile for a large variety of cancers, being a promising tool for further individualized approaches. However, it is not established if using FM testing would result in improved case management and better outcomes than classic specific molecular testing. A retrospective analysis was performed on patients with solid tumors who had FM testing in our center between April 2019 and June 2022, to characterize the identified altered genes and mutations, establish their prognostic role, and determine whether these test results improved treatment options in those cases. Clinical factors and outcomes were measured using SPSS statistics 26. Out of 19 tests, only one patient had a direct change in therapy based on the FM tests. We identified a total of 72 oncogenic mutations, and the most common included TP53 (n=9, 15%), followed by KRAS (n=7, 11%), CDK2A (n=4, 6%), and CDKN2B (n=4, 6%) and APC (n=3, 5%). None of the patients managed to be included in the clinical trials suggested by the reports. To summarize, FM testing managed to identify only a few actionable mutations, which led to a clear therapeutic decision. Despite offering a wide molecular view of tumors, due to the extremely high costs, difficulty in accessing clinical trials from Western Europe, and the fact that few of the found alterations have a correspondent pharmacological agent, the utility of this kind of NGS approach may benefit a minority of cancer patients.

Keywords: foundation Medicine; NGS; precision medicine.

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Conflicts of Interest

The authors declare no conflict of interest.