Molecular profiling of testicular cancer

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Background

The incidence of testicular germ cell tumors (TGCT) has been increasing in many western countries over the past decades. Although TGCT can exhibit a good response to therapy, patients with relapse or refractory disease often have limited options. The use of biomarkers to predict treatment outcomes could be of high clinical relevance.

Methods

Prospective profiling of 51 TGCT cases was performed using biomarkers measured by ISH, providing a treatment associated with benefit in 9.8% of cases tested (5/51). Profiling, treatments associated with benefit were found in 100% of patients. Pathway state of treatment resistance are scarcely understood. Despite the high cure rates of GCT patients, the most common observed changes in protein of TOPO2A (87%), EGFR (86%), RRM1 (60%), SPARC (40%), and TLE3 (40%), and 48% of patients had mutations in PIK3CA, PTEN observed in 65% of patients.

Results

- 7 different gene expressions were altered in TGCT with advanced disease.
- The most commonly observed changes in protein expression were upregulations of TP53 (30%), ERCC1 (83%), MGMT (69%), and PTEN (65%), and downregulations of EGFR (86%), RRM1 (60%), and SPARC (40%).
- Mapping of the mutation map of these patients showed that TP53 mutations did not have a loss of PTEN protein expression but no other mutations.

Conclusions

- The same scoring system was applied.
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Updated Abstract

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Tumor Profiling of Testicular Germ Cell Cancer

To allow effective treatment and detect primary therapeutic failure, gene mutation analysis by immunohistochemistry and gene amplification analysis by FISH were applied. A total subset of the overall population may be amenable to either cMET, HER2 or cKIT inhibition.

- 16% of TGCTs have cMET amplification without PTEN loss.

Demographics

- No clinical data on disease stage, recurrence or prior treatment.

Tumor Profiling of Testicular Germ Cell Cancer

- A low prevalence of mutations was observed in advanced / refractory TGCT with 6 mutations in 14 different genes.

- In TGCTs with no receptor overexpression, no mutations were found.

- Sequencing of Testicular Germ Cell Tumors by NGS, PCR, and radiograph analysis

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Overview of Detected Pathway Alterations in Testicular Germ Cell Cancer

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References