



Integrating Genomic Profiling and Ayurvedic Therapy for Precision in Salivary Gland Tumors

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Salivary gland tumors represent a diverse group of neoplasms with varying clinical behaviors and treatment responses. Traditional treatment modalities have often relied on histological classification, which may not fully capture the underlying molecular heterogeneity. This paper explores the utility of genomic profiling, particularly next-generation sequencing (NGS) techniques, in unraveling the molecular landscape of salivary gland tumors. Additionally, it investigates the potential of integrating Ayurvedic therapy with precision medicine approaches based on genomic alterations for personalized treatment strategies. By leveraging genomic data and Ayurvedic principles, a more holistic and individualized approach to managing salivary gland tumors can be achieved.

Salivary gland tumors pose significant challenges in clinical management due to their histological diversity and unpredictable clinical behavior. Traditional treatment algorithms often rely on histopathological classification, which may not fully account for the underlying molecular complexity driving tumor progression and response to therapy. Genomic profiling using NGS technologies offers a comprehensive approach to dissecting the molecular landscape of these tumors, providing insights into potential therapeutic targets and prognostic markers. Integrating Ayurvedic therapy with precision medicine strategies holds promise in optimizing treatment outcomes by considering the holistic needs of the patient and targeting specific molecular aberrations.

Molecular landscape of salivary gland tumors

Salivary gland tumors encompass a spectrum of histological subtypes, each characterized by distinct genetic alterations and clinical behaviors. Recent advances in genomic profiling have revealed recurrent genetic mutations and chromosomal rearrangements that underpin the pathogenesis of these tumors. For exam-

ple, alterations in genes such as MYB-NFIB fusion in adenoid cystic carcinoma and HRAS mutations in mucoepidermoid carcinoma have been identified as key drivers of tumorigenesis. Furthermore, genomic profiling has facilitated the subclassification of salivary gland tumors based on their molecular signatures, providing valuable prognostic information and guiding therapeutic decision-making.

Next generation sequencing techniques in salivary gland tumors

NGS technologies have revolutionized our ability to interrogate the entire genomic landscape of cancer, enabling comprehensive analysis of somatic mutations, copy number alterations, and gene fusions. In the context of salivary gland tumors, NGS offers a high-throughput platform for identifying actionable genetic alterations that can inform targeted therapy approaches. By sequencing tumor DNA extracted from saliva samples, clinicians can obtain real-time information on the genomic profile of the tumor, facilitating personalized treatment strategies and monitoring of disease progression.

Precision medicine approaches

Precision medicine aims to tailor therapeutic interventions to the individual characteristics of each patient, taking into account their genetic makeup, environmental factors, and lifestyle preferences. In the context of salivary gland tumors, precision medicine approaches leverage genomic profiling data to identify molecular targets for therapy and stratify patients based on their likelihood of response to specific treatments. By matching patients with targeted agents or immunotherapies that inhibit oncogenic pathways or enhance immune surveillance, precision medicine holds the potential to improve treatment efficacy and minimize adverse effects.

Integration with ayurvedic therapy

Ayurveda, the ancient Indian system of medicine, emphasizes the holistic approach to health and disease management, focusing on restoring balance and harmony within the body. Ayurvedic therapies encompass a range of modalities, including herbal medicines, dietary modifications, lifestyle interventions, and mind-body practices. Integrating Ayurvedic principles with genomic profiling and precision medicine strategies offers a complementary approach to managing salivary gland tumors. Ayurvedic herbs such as Turmeric (*Curcuma longa*), Giloy (*Tinospora cordifolia*) and Ashwagandha (*Withania somnifera*) have demonstrated anti-cancer properties and may synergize with conventional treatments to enhance therapeutic outcomes and improve quality of life for patients.

In conclusion, genomic profiling using NGS techniques holds immense potential in elucidating the molecular landscape of salivary gland tumors and guiding personalized treatment strategies. By integrating Ayurvedic therapy with precision medicine approaches, clinicians can adopt a holistic and patient-centered approach to managing these complex neoplasms. Future research efforts should focus on validating genomic biomarkers, optimizing treatment protocols, and conducting clinical trials to evaluate the efficacy of combined Ayurvedic and precision medicine interventions. Together, these efforts will pave the way for more effective and personalized care for patients with salivary gland tumors.