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Mini-Review

Future prospects in parathyroid diseases

Azar Baradaran[1,2#], Padideh Daneii[3#], Mahshid Imankhan[4], Mahsa Motieian[5], Sina Neshat[6*]

Abstract

Prospects in parathyroid diseases involve a multidisciplinary approach that combines research, clinical practice, and patient-centered care to improve understanding, diagnosis, and treatment outcomes for individuals with these conditions. Accordingly, further advancements in genetics, biomarkers, imaging, targeted therapies, non-surgical treatments, and personalized medicine can potentially revolutionize diagnosing, treating, and managing parathyroid diseases.

Keywords: Parathyroid diseases, Primary hyperparathyroidism, Biomarkers, Hypoparathyroidism, Parathyroid hormone

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Introduction

Parathyroid diseases, such as primary hyperparathyroidism and hypoparathyroidism, have seen significant advancements in diagnosis and management in recent years (1). However, several future prospects could further improve the understanding and treatment of parathyroid diseases as follows;

Genetic studies

Further research into the genetic basis of parathyroid diseases can help identify specific gene mutations associated with these conditions. This information can lead to the development of genetic tests that can detect these mutations in individuals at risk of developing parathyroid diseases. It can also aid in predicting disease progression and developing targeted therapies that can address the underlying genetic cause (2,3).

Biomarkers

The discovery and validation of specific biomarkers related to parathyroid diseases can have several implications. These biomarkers can be used for early detection, accurate diagnosis, and monitoring of disease progression. For example, identifying biomarkers that indicate excessive or deficient parathyroid hormone (PTH) secretion can help diagnose primary hyperparathyroidism or hypoparathyroidism, respectively. Biomarkers can also be used to track response to treatment and determine the appropriate timing for intervention (1,4).

Advances in imaging techniques

Imaging techniques like ultrasound and sestamibi scintigraphy are commonly used to detect and locate parathyroid lesions. However, these techniques have limitations in terms of sensitivity and specificity. Future advancements in imaging techniques can improve the accuracy of detecting and localizing parathyroid lesions. This can include the development of novel ultrasound techniques with higher resolution or using molecular imaging agents that specifically target parathyroid tissue (5,6).

Targeted therapies

Understanding the molecular mechanisms underlying parathyroid diseases can help identify specific molecular targets for therapeutic interventions. For example, if a particular protein or receptor is found to be overexpressed in parathyroid tissue, researchers can develop medications that specifically target and inhibit this protein or receptor. Targeted therapies can potentially reduce the need for surgical intervention or serve as adjuncts to surgery (7,8).

Non-surgical treatment options

While surgery is currently the primary treatment for parathyroid diseases, there is ongoing research into non-surgical treatment options. Pharmacological interventions that can effectively regulate PTH secretion or promote healthy parathyroid cell growth are being explored. Additionally, minimally invasive techniques,

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[1]Department of Pathology, Al-Zahra Hospital, Isfahan, Iran. [2]Nickan Research Institute, Isfahan, Iran. [3]Department of Cardiology, University of Florida Health, Jacksonville, Florida, United States. [4]Independent Researcher, 1514 Sheridan Rd NE apt 4014, Atlanta, Georgia, United States. [5]Independent Researcher, Dobbs Ferry, New York, United States. [6]Department of Biostatistics and Epidemiology, 550 16th St, University of California San Francisco, San Francisco, CA, United States.

***Corresponding author:** Sina Neshat, Email: seyedsina.neshat@ucsf.edu

[#]Both authors contributed equally to this paper.

Implication for health policy/practice/research/medical education

Ongoing research in parathyroid diseases holds great promise for the future. Advancements in genetics, biomarkers, imaging, targeted therapies, non-surgical treatments, and personalized medicine can potentially improve diagnosis, treatment, and outcomes for patients with parathyroid diseases.

such as radiofrequency ablation or cryoablation, are being investigated as potential alternatives to surgery for certain cases (9,10).

Personalized medicine

As our understanding of parathyroid diseases' genetic and molecular basis improves, personalized medicine approaches can become more feasible. Genetic profiling can help determine an individual's specific risk factors, disease severity, and treatment response. This information can guide the development of personalized treatment plans tailored to the individual's needs to optimize outcomes and minimize adverse effects (3,11).

Patient education and support

Providing comprehensive education and support for patients with parathyroid diseases can help improve disease management and quality of life. This may involve resources such as patient support groups, educational materials, and access to specialized healthcare professionals (12,13).

Conclusion

These prospects hold promise for improving patient outcomes, reducing the burden of surgical interventions, and providing more personalized and effective care. The future prospects in parathyroid diseases involve ongoing research and advancements in understanding the pathophysiology, diagnosis, and treatment options of parathyroid diseases.

Authors' contribution

Conceptualization: Sina Neshat, Azar Baradaran.
Data curation: Sina Neshat.
Funding acquisition: Sina Neshat.
Investigation: Sina Neshat, Azar Baradaran.
Resources: Sina Neshat.
Supervision: Sina Neshat, Azar Baradaran.
Validation: Sina Neshat.
Visualization: Sina Neshat.
Writing–original draft: Sina Neshat, Azar Baradaran
Writing—review and editing: Padideh Daneii, Mahsa Motieian, Mahshid Imankhan.

Conflicts of interest

The authors declare that they have no competing interests.

Ethical issues

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