Precision medicine in clinical nephrology: Tailoring treatment to individual patients.

Li Ying*

Department of Nephrology, Peking University First Hospital, China

Introduction

The idea of precision medicine has gained popularity recently in a number of medical fields, including clinical nephrology. Precision medicine, commonly referred to as personalised medicine, is the practice of customising treatment plans to each patient's particular characteristics, such as their genetic composition, lifestyle circumstances, and biomarker profiles. Precision medicine has the potential to improve outcomes and minimise side effects in the field of nephrology by determining the best course of action for individual kidney disorders and patient demographics[1].

The care of kidney transplant recipients is one of the main areas in clinical nephrology where precision medicine is having an influence. For those with end-stage renal disease, transplantation offers a potentially life-saving treatment option. However, kidney transplantation success is dependent on a number of factors, one of which is the recipient's and donors immune compatibility. Clinicians can now evaluate the risk of rejection and customise immunosuppressive regimes for each patient, improving transplant outcomes while lowering the risk of problems including organ rejection and infection. This is made possible by advancements in genetic testing and immunological profiling [2].

Additionally, the care of glomerular diseases—a broad category of kidney problems marked by damage to the kidney's filtering units, or glomeruli—begins and ends with precision medicine. A broad spectrum of illnesses are included in the term "glomerular diseases," such as lupus nephritis, membranous nephropathy, and IgA nephropathy, each with a distinct pathogenesis and set of treatment considerations.

Clinicians can reduce the risk of disease and improve patient outcomes by developing targeted medicines that address the underlying causes of various glomerular diseases by identifying particular biomarkers and molecular pathways associated with those diseases. The treatment of diabetic kidney disease, one of the main causes of chronic kidney disease (CKD) globally, is another field in which precision medicine is revolutionising clinical nephrology. Because diabetic kidney disease is a complicated condition impacted by a number of genetic, metabolic, and environmental factors, it can be difficult to forecast how the disease will advance and to identify the best course of action for therapy. However, thanks to developments in precision medicine and genomic research, physicians may now identify genetic risk factors for diabetic kidney disease and customise treatment plans for specific patients based on their biomarker profiles and genetic propensity [3].

This tailored approach to treatment has the potential to enhance results and lessen the toll that diabetic kidney disease takes on afflicted individuals and medical systems. To sum up, precision medicine is a paradigm shift in clinical nephrology that has the potential to completely change kidney disease diagnosis, treatment, and management. Through the utilisation of advancements in genetic research, molecular profiling, and biomarker identification, medical professionals can create customised treatment plans that maximise patient results and reduce the possibility of negative consequences [4].

The incorporation of precision medicine into clinical practice has the potential to improve kidney health and change the lives of people with renal illnesses as it develops. Kidney diseases are a group of illnesses that include end-stage renal disease (ESRD), chronic kidney disease (CKD), and acute kidney injury (AKI). AKI is defined by an abrupt decrease in kidney function, which is frequently brought on by infections, dehydration, or drug toxicity. Chronic kidney disease (CKD) is the progressive loss of kidney function over time, frequently brought on by underlying illnesses such as glomerulonephritis, diabetes, or hypertension. Renal replacement treatment is necessary in the end stage of chronic kidney disease (ESRD), when kidney function is significantly compromised. Diagnostic Methods: A complete assessment of the patient's medical history, physical examination, laboratory testing, and imaging studies are all necessary for the diagnosis of kidney problems. Serum creatinine, blood urea nitrogen (BUN), and estimated glomerular filtration rate (eGFR) are important laboratory tests that offer information on kidney function. Kidney structure assessment and abnormality detection are aided by urinalysis, urine protein-to-creatinine ratio, and imaging modalities such as CT or ultrasound scans. Renal biopsy may be required in some circumstances in order to confirm the diagnosis [5].

Conclusion

Treatment Plans: The goals of kidney disease treatment are to lessen symptoms, stop complications, and limit the illness's course. Exercise, dietary adjustments, and quitting smoking are a few examples of lifestyle modifications that

Correspondence to: Li Ying, Department of Nephrology, Peking University First Hospital, China, USA, E-mail: li@ying.cn

Received:-27-Jan-2024, Manuscript No. aacnt-24- 129047; ***Editor assigned***: 01-Feb-2024, PreQC No.aacnt-24- 129047(PQ); ***Reviewed***:15-Feb-2024, QC No. aacnt-24-129047; ***Revised:*** 22-Feb-2024, Manuscript No. aacnt-24- 129047(R); ***Published***: 29-Feb-2024, DOI: 10.35841/ aacnt-8.1.188

Citation: *Yang L. Precision medicine in clinical nephrology: Tailoring treatment to individual patients. J Clin Nephrol Ther. 2024;8(1):188*

may be part of treatment plans. Blood pressure, blood sugar, and proteinuria can all be managed with medication. Renal replacement treatment in more advanced patient's options like hemodialysis, peritoneal dialysis, or kidney transplantation may be required.

References

1. Satoskar AA, Suleiman S, Ayoub I. Staphylococcus infection–associated GN–spectrum of IgA staining and prevalence of ANCA in a single-center cohort. Clin J Am Soc Nephrol. 2017;12(1):39-49.
2. Pola E, Logroscino. Onset of Berger disease after Staphylococcus aureus infection: septic arthritis after anterior cruciate ligament reconstruction. Arthrosc - J Arthrosc Relat Surg. 2003;19(4):1-3.
3. Jackson KA. Invasive methicillin-resistant Staphylococcus aureus infections among persons who inject drugs—six sites, 2005–2016. MMWR. Morb Mortal Wkly Rep. 2018;67
4. Vosti KL, Johnson RH, Dillon MF. Further characterization of purified fractions of M protein from a strain of group A, type 12 Streptococcus. J Immun. 1971;107(1):104-14.
5. Anthony BF, Kaplan EL. Attack rates of acute nephritis after type 49 streptococcal infection of the skin and of the respiratory tract. J Clin Investig. 1969;48(9):1697-704.
6. Worawichawong S, Girard L. Immunoglobulin A–dominant postinfectious glomerulonephritis: frequent occurrence in nondiabetic patients with Staphylococcus aureus infection. Hum pathol. 2011;42(2):279-84.
7. Nasr SH, Markowitz GS, Whelan JD, et al. IgA-dominant acute poststaphylococcal glomerulonephritis complicating diabetic nephropathy. Hum Pathol. 2003 ;34(12):1235-41.
8. Rodriguez-Iturbe B, Musser JM. The current state of poststreptococcal glomerulonephritis. J Am Soc Nephrol. 2008;19(10):1855-64.
9. Pola E, Logroscino. Onset of Berger disease after Staphylococcus aureus infection: septic arthritis after anterior cruciate ligament reconstruction. Arthrosc - J Arthrosc Relat Surg. 2003;19(4):1-3.
10. Haas M. IgA-dominant postinfectious glomerulonephritis: a report of 13 cases with common ultrastructural features. Hum. Pathol. 2008;39(9):1309-16.

Citation: *Yang L. Precision medicine in clinical nephrology: Tailoring treatment to individual patients. J Clin Nephrol Ther. 2024;8(1):188*