
Pathophysiology of healthcare

How Chronic kidney disease leads to hypertension

Chronic kidney disease refers to a condition in which the renal system cannot perform its function resulting in the accumulation of fluids in the body system. Hypertension is associated with chronic kidney disease as it arises from the constriction of the blood vessels, further damaging their functioning in the body (Pugh et al., 2019, p. 366). The renal function in the kidney requires a sufficient supply of blood to undertake its regulatory functions, including blood pressure and body fluids. In most cases, an injury to the blood vessels, including narrowing and weakening in the kidney, results in the high buildup of fluids in the blood, further causing an elevation of the blood pressure and hypertension in the body (Nuhu & Bhandari, 2018, p.3). Chronic kidney disease results in arteriosclerotic lesions and consequently increases the accumulation of fluid, blood, and molecules in the kidney. Chronic conditions result in progressive damage to the renal tissues decreasing the filtration process in the glomerular. With the high buildup of fluids in the body, an individual experiences high blood pressure, resulting in hypertension.

Besides, chronic kidney disease remodels the artery walls resulting from the high blood pressure in the body. There is a significant increase in the deposition of calcium in the body with the alterations to the vascular tissues affecting the extracellular matrix composition in the blood vessels (Pugh et al., 2019, p. 371). The increased calcification of the body tissues and vessels increases the risk for chronic kidney disease patients to experience hypertension further. Although calcium deposition is associated with aging persons, there has been a considerable increase in premature cases of arterial calcification in chronic kidney disease patients.

Additionally, there is a potential role of sympathetic overactivity of the body system in causing hypertension. According to Kaur et al. (2017, p. 3), sympathetic overactivity involves a condition where there are increased actions in the nerve system notable through increased respiration, high blood pressure conditions, diaphoresis, and high body temperatures. The increased activity in the body results in the risk potentials for cardiovascular conditions and consequently progression of hypertension and high blood pressure.

Stage of chronic kidney disease and management approach

The Glomerular Filtrate Rate (GFR) provides a realistic estimate for calculating kidney function. As an index-based formula, the Cockcroft -Gault formula enhances the determination of standardizing test results for kidney conditions (Senghor et al., 2021, p. 238).

140-49 years x 52 kg/1.23 x 540 umol/L

91 years x 52 kg/ 664.2 = 7.1 mls/min

The patient has reached the end-stage kidney failure in which the kidney declines to undertake its normal functions. The condition necessitates a patient to seek dialysis or transplantation. The kidney dialysis will endeavor to eliminate specific amounts of fluids in the blood system with the aspect aimed at restoring the potential levels of the electrolytes and assisting in the maintenance of the blood pressure levels (Chawla et al., 2012, p. 244). Further, supportive care in which the health practitioner undertakes to assist the patient in overcoming their lifestyle habits and conditions provides an opportunity to slow down the disease's progression.

References

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