



Investigations in Hypertension

Investigations

- Urine analysis : proteinuria, hematuria
- Hematocrit: polycythemia
- LFTS : Urea and creatinine
- Serum electrolyte : low potassium indicate hyperaldosteronism
- RBS and FBS
- Lipid profile
- Serum Uric acid
- ECG:left ventricular hypertrophy and strain pattern
- Echo
- Chest x-ray: cardiomegaly
- Ambulatory Blood Pressure Monitoring (ABPM)

Interpretation of Blood Investigations in Hypertension

Blood investigations help assess the underlying causes, organ damage, and medication side effects in hypertensive patients. Here's a breakdown of commonly ordered tests and their clinical relevance:

1. Kidney Function Tests (KFT)

Serum creatinine and blood urea nitrogen (BUN) are checked to assess kidney health. Elevated levels suggest impaired kidney function, which is both a complication and a cause of hypertension. A low estimated glomerular filtration rate (eGFR) indicates reduced kidney filtering capacity.



2. Electrolytes

Sodium levels reflect dietary salt intake and fluid balance. High sodium can worsen blood pressure. Potassium is important for heart and muscle function. Low potassium often occurs with diuretic use, while high potassium may result from ACE inhibitors or ARBs. Calcium imbalances can also influence blood pressure regulation.

3. Lipid Profile

Cholesterol levels are assessed to evaluate cardiovascular risk. High levels of total cholesterol and LDL (bad cholesterol) contribute to arterial stiffness and atherosclerosis, which can raise blood pressure. Low levels of HDL (good cholesterol) and high triglycerides also increase cardiovascular risk.

4. Blood Glucose

Fasting and post-meal blood sugar levels help screen for diabetes, which commonly coexists with hypertension. An HbA1c test gives an average blood sugar reading over the past 2–3 months. Poor sugar control increases the risk of vascular damage and hypertension-related complications.

5. Thyroid Function Tests

Thyroid hormones influence metabolism and vascular tone. Hypothyroidism (underactive thyroid) may cause diastolic hypertension, while hyperthyroidism (overactive thyroid) can cause systolic hypertension. TSH and free T3/T4 levels help identify thyroid-related causes of high blood pressure.

6. Complete Blood Count (CBC)

This test screens for anemia, infections, and platelet levels. Anemia may worsen heart workload, especially in chronic hypertensive patients. Platelet count is important if antiplatelet medications are being considered.

7. Urine Tests

Urinalysis and urine albumin-to-creatinine ratio (UACR) help detect early kidney damage. Protein in the urine is a warning sign of nephropathy due to uncontrolled blood pressure.



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Conclusion

These blood tests offer a full picture of a hypertensive patient's health status, guiding treatment decisions and helping prevent long-term complications.