

Research Article

Lab diagnostics for Sepsis screen

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1. Introduction

Sepsis is a widespread manifestation of bacterial invasion, virus, parasite or from autoimmune disorders or cancer or AIDS and more such visible and invisible onslaught on the human body which results in fulminant state and difficult to revert. It may progress towards worse like shock and coma or less commonly improve symptoms towards recovery and cure. Because of the seriousness of the conditions and multiple causations and factors underlying the severity, it is an elusive and difficult to treat arena in medical science.

The severity of disease manifestations increases beyond control, there are initial stages in the progression of disease when it is reversible upon removing the inciting factors or reverting to a healthy lifestyle. But on continuous insult of environment, chemicals, pollution, faulty eating, preservatives, drugs etc it is possible that the health condition progresses to a state where it slowly becomes difficult to treat or reverse the condition.

After a certain time, it may become automatically progressive in nature. In hospital setting sepsis patients are kept in intensive care unit, high dependency unit for the amount of care and rigorous multidisciplinary team approach to solve the crisis.

2. Method

All the patients report from 6.6.22 to 6.2.24 were observed and recorded. Sample size was 500 calculated by the existing prevalence and 80 percent precision. Inclusion criteria was by history on the test requisition form pointing towards sepsis.

Exclusion criteria were routine investigation patients or with no history in the test requisition form. Sample collection was randomised as all relevant samples were collected. The data was recorded in Microsoft Excel spreadsheet and analysed by SPSS version 29. Some of the markers that we use in clinical biochemistry laboratory to assess, make diagnosis, ascertain prognosis, reversibility, seriousness of the condition is;

- NT ProBNP
- Procalcitonin
- Ferritin
- iPTH
- CRP
- Urine ACR
- Urine sodium, potassium
- Serum Sodium
- Serum Potassium
- Urea Creatinine
- Blood sugar levels

These parameters are not specific for any particular disease or diagnosis but a combination of these do show the direction of disease. Sepsis can mean a broad range of conditions from diabetic infection, uro sepsis, fulminant hepatitis, to chronic kidney disease, fever, and jaundice.

While the treatment varies from condition to condition but biochemical parameters and immunoassays do pave the way to show deterioration or recovery. Treatment may be in the form of antibiotics, rehydration with intravenous fluids, insulin, electrolyte correction, treatment of cause like cancer.

3. Results

Sepsis markers useful in diagnosis are as follows:

- Patients on chronic kidney disease and end stage renal failure have high ferritin and iPTH, low sodium, calcium, vitamin D, high phosphorus.
- Patients with chest pain, fever probably having Myocardial infarction have high NT proBNP, procalcitonin.
- Patients having high fever, vomiting, diarrhoea have high procalcitonin, CRP probably have bacterial infections.
- Pregnant gynaecology patients with high urine Albumin Creatinine ratio may point towards developing pre-eclampsia.

Sepsis markers useful in prognosis are the higher numerical value of NT ProBNP (300 ng/ml and above), procalcitonin (6 ng per ml and above) signify severe disease pointing towards severe sepsis and worse prognosis, needing urgent action,

CCU care. Higher numerical value of CRP, Procalcitonin points towards severe bacterial sepsis, need for culture sensitivity and use of stronger antibiotics, probably broad spectrum also and for a longer time.

High CRP in children signifies severe disease. Higher levels of bilirubin in neonates, total, direct and indirect point towards kernicterus and brain involvement, need for phototherapy as treatment. Very low sodium levels developing in a short span carries worse prognosis. While low serum Sodium over prolonged time period may not be so ominous. Dyselectrolytemia may be associated with various cancers, kidney disease. Higher levels of urine Albumin Creatinine ratio may signify are associated with preeclampsia.

4. Conclusion

Laboratory biomarkers play an important role in diagnosis and prognosis of sepsis patients and aid the clinical physician with the choice of pharmacology and management.

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