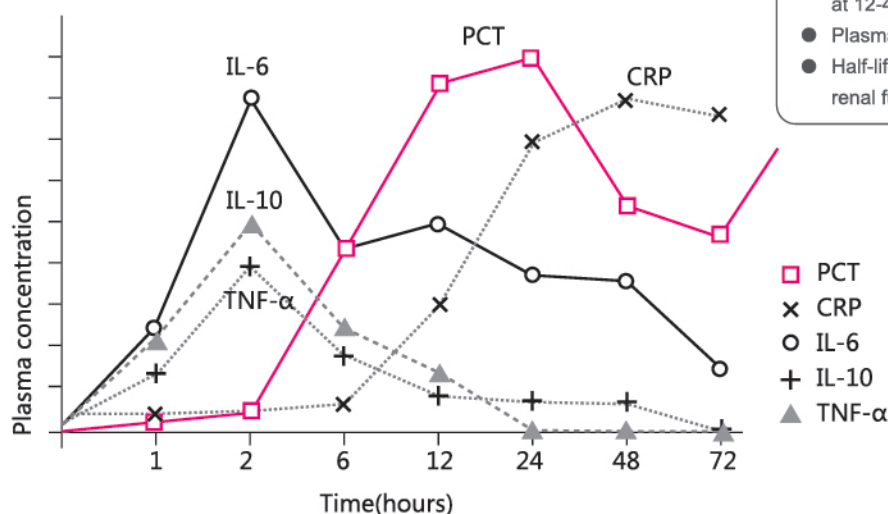


PCT (Procalcitonin)

The Procalcitonin (PCT), which is the precursor of calcitonin, is a small protein comprising 116 amino acid with molecular weight of about 13 kDa.

In 1993 elevated level of PCT in patients with severe infection of bacterial origin was reported by Assicot M. It can be used to distinguish bacterial infection and non-bacterial infection.

Kinetics of PCT



PCT

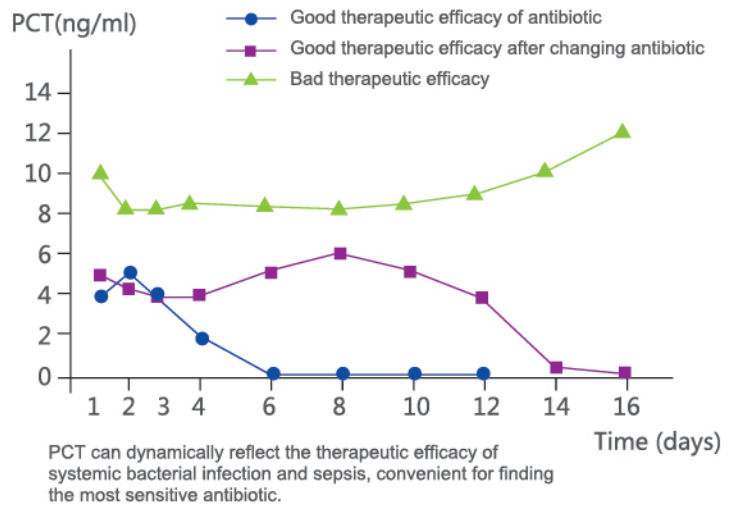
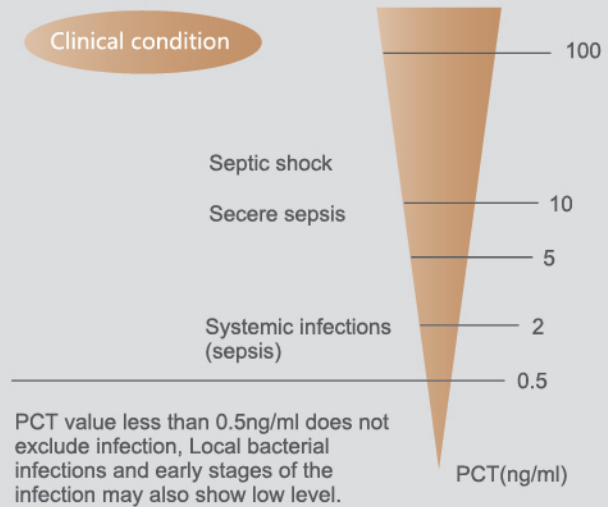
- The PCT level begin to elevate at 2-3 hours, elevate sharply at 6-8 hours, reach to peak at 12-48 hours, back to normal at 2-3 days
- Plasma concentration is 0.5 ng/ml to 10000 ng/ml
- Half-life is 15 to 20 hours, not easy to be affected by renal function

- **WBC count** : regarding different microbial infections, the WBC count maybe increase or decrease. With lack of sensitivity and specificity, it is easy to be influenced by other factors.
- **ESR** : used as a supplementary diagnostic indicator of many infectious and non-infectious diseases, but very low specificity will cause more problems.
- **CRP** : as a acute phase Protein. the CRP level will elevate caused by both infectious and noninfectious factors. It can't be detected until 12 hours after inflammation.
- **IL6** : as a pro-inflammatory cytokine, IL6 is a good indicator of sepsis's prognostic assessment, but it is also relevant to many noninfectious factors.

Elevated level of PCT as the spread and aggravation of infection

Guide the use of antibiotics

- PCT can monitor the therapeutic efficacy of severe systemic bacterial infection and sepsis, to guide the rational use of antibiotics, reduce the use of antibiotics and shorten the duration of antibiotics' use.
- PCT can be a quantitative indicator to the use of antibiotics which can lower respiratory tract infection. It can reduce the clinical use of antibiotics, reduce the cost of treatment and avoid the production of bacterial resistance.
- PCT can be specific indicator to the monitor the bacterial infection's severity of CAP. Compared with empirical treatment, it can reduce the use of antibiotics for 5-12 days.
- Monitoring COPD with PCT can timely reflect the therapeutic efficacy of antibiotics. Compared with the groups without testing PCT, monitoring PCT level can significantly reduce the use of antibiotics.
- PCT can reflect the therapeutic efficacy of VAP treatment at early phase. If PCT level is still higher than 0.5 ng/ml at the 7th day of treatment, it suggest a failure treatment.



Application of PCT

Emergency Department
Inpatient Wards
Surgery
Medical ICU
Surgical ICU



Diagnosis of severe systemic bacterial infection and sepsis
 monitoring the therapeutic efficacy and use of antibiotics

Pediatric emergency
Pediatric ward
Pediatric ICU
Neonatal department



Diagnosis and monitoring of local and systemic bacterial infection monitoring of neonatal sepsis

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