

Cancer antigen (CA)-125 in Confirming the Diagnosis of Pulmonary and Extra-pulmonary TB

Tuberculosis (TB) continues to be a major global health issue, especially in developing countries. In 2016, it was estimated that global TB incidence was 10.4 million, or 140 per 100,000 population, with most cases occurring in South-East Asia (45%), followed by Africa (25%), and the Western Pacific (17%). Countries with the largest number of incident cases include India, Indonesia, China, Philippines, and Pakistan. In Indonesia, there was a total number of 298.128,00 TB cases in the year 2016, with as much as 156.723,00 being acid-fast bacilli (AFB) positive. Tuberculosis is usually diagnosed by assessing the patient's clinical manifestations, sputum AFB, and radiological findings. If these methods do not suffice in diagnosing TB, a number of markers have been found to be helpful in diagnosing TB, i.e. IGRA, LAM, GenExpert, MGIT

Cancer antigen (CA)-125 is a high molecular weight mucin-like glycoprotein. It is produced by amnion, fetal coelomic epithelium and its derivatives, fallopian tube epithelium, endometrium, endocervix, pleura, or peritoneum. This glycoprotein is mainly elevated in ovarian malignancies, but high levels of it can also be found in other conditions such as menstruation period, pregnancy, endometriosis, cirrhosis, pancreatitis, renal and hepatic insufficiencies, pelvic inflammatory disease, and tuberculosis. It is excreted with the synthesis in the epithelias mentioned above, and also in response to inflammation or tissue damage. It was in 1980 that the increase of CA-125 levels were observed in tuberculosis. The patients were initially diagnosed with ovarian cancer (from ascites) but were eventually diagnosed with peritonitis tuberculosis, and not malignancies. To this day, studies are continuously being conducted to assess the role of CA-125 in the diagnosis of TB.

The majority of previous studies conclude that CA-125 levels are significantly increased in patients with active TB compared to those with other lung infections, latent TB, or healthy individuals. One prospective cohort in Egypt involved three groups of patients (one group of active pulmonary TB patients, one group of patients with pneumonia, and one group of healthy participants) to evaluate the diagnostic value of serum level Ca-125 in active pulmonary TB and its association to the severity of the disease. The study revealed that Ca-125 levels were significantly higher in active TB compared to the other two groups

(regardless of the sputum AFB results). In the sputum results that were highly positive (+++), the mean Ca-125 level was 148 IU/mL, while in AFB negative patients, the mean Ca-125 was 37.9 IU/mL. Therefore, CA-125 can be used as a marker for TB (pulmonary and extra-pulmonary) in difficult to diagnose TB patients.