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Commentary on: Serum Albumin for Tuberculosis in HIV Infected Patients Eligible for Antiretroviral Therapy

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The recent publication entitled "serum Albumin for Tuberculosis in HIV Infected Patients Eligible for Antiretroviral Therapy"[1] is very interesting. Alvarez-Uria *et al.* mentioned that "serum albumin can be a useful low-cost diagnostic marker for tuberculosis in HIV infected patients eligible for ART."[1] In fact, this conclusion has to be carefully considered. Albumin is a basic biochemistry parameter in clinical practice. The test is widely used in any clinical setting and the main indication for measuring blood albumin level is to determine the hypoalbuminemia, which can contribute to edema.[2] In medical practice, the common conditions that can result in hypoalbuminemia include liver disease, glumerulopathy and protein malnutrition.[2]

The use of albumin as a biomarker for other conditions is very interesting issue in laboratory medicine. Focusing on infection, the aberration of blood albumin level can be observed.[3] Of several infections, tuberculosis is widely discussed about its interrelationship with alteration of blood albumin. Extremely low blood albumin level is a common finding in the death cases of tuberculosis.[4] Horita *et al.* recently proposed blood albumin as an important determinant for prognostic scoring of tuberculosis.[5] It was found that low blood albumin could effectively predict a poor outcome.[4] However, the use of blood albumin determination in the cases with concurrent morbidity is not well understood and the study in this topic is interesting. Of several clinical problems, the important problematic concurrent infection in the patients with tuberculosis is HIV infection. Due to the deterioration of immunity in the HIV infected patients, the emerging of tuberculosis can be expected. The clinical use of blood albumin determination in the cases with HIV infection is a challenging topic. Alvarez-Uria *et al.* performed a Cohort Study on this topic in India.[1] They focused their interest on the feasibility of using blood albumin determination as biomarker to predict tuberculosis in the HIV infected patients.[1] Alvarez-Uria *et al.* found that "the diagnostic accuracy of serum albumin, measured by the area under the receiver operating characteristic curve, to predict tuberculosis was 0.81."[1]

As Alvarez-Uria *et al.* reported, the diagnostic property of the albumin was only fair and it could not be used for ruling out tuberculosis. In fact, the hypoalbuminemia can be seen in several conditions that have the problem of protein malnutrition. Both tuberculosis and HIV infection can contribute to the problem of hypoalbuminemia. Focusing on laboratory parameters, hypoalbuminemia is very common in the HIV infected patients.[6,7] Graham *et al.* mentioned that "each 1 g/liter decrease in albumin with HIV-1 acquisition was associated with a 13% increase ($p = 0.01$) in the risk of progressing to a CD4 count <200 cells/mul."[6] Altice *et al.* also mentioned that low blood albumin level suggested "increased risk for HIV, particularly in settings where HIV testing resources are scarce."[8]

It is no doubt that Alvarez-Uria *et al.* could not be able to discriminate between the cases with and without tuberculosis. Focusing on the observation that hypoalbuminemia was relating to the poor outcome, it has ever been reported in previous studies. Sudfeld *et al.* found that this relationship is dependent to CD4+ count; hence, this reflects the nutritional not the immunological problem.[9] Dao also found a similar observation that hypoalbuminemia could help predict mortality in HIV infected cases, especially for the first year of initiating ART.[10]

Conclusively, with or without tuberculosis, hypoalbuminemia could be a good biomarker for predicting poor outcome of HIV infection. On the other hand, with or without HIV infection, hypoalbuminemia could be a good biomarker for predicting poor outcome of tuberculosis. However, the conclusion on the concurrent HIV and tuberculosis infection, the value of hypoalbuminemia in predicting requires further systematic investigation to clarify.

Ethical issues

There is none to be declared.

Competing interests

The authors declare no conflict of interests.

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