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Parasitic infection in HIV-infected patients at varying T cell levels rural and peri-urban areas in Ghana

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Background: Intestinal parasites especially coccidian parasites are related to gastrointestinal symptoms causing severe diarrhoea in HIV/AIDS patients. These parasitic infections have further complicated the problem of morbidity and mortality in HIV/AIDS patients especially in Sub Saharan Africa. Hence, this study investigated the occurrence of intestinal parasites in HIV/AIDS at different CD4 T-cell counts.

Methods: A cross sectional study was conducted on six hundred and seventy two (672) participants aged from 8 to 72 years of both sexes from April to July, 2011.This total number were made up of HIV positive patients and non-HIV patients. Examination of stool by wet mount, formol-ether concentration including staining techniques; Field's stain, Modified Field's stain, and modified Zhiel Neelsen staining procedures were performed. Immunophenotyping was employed for CD4 T-cell counts determination.

Results: The total prevalence of intestinal parasitic infections among HIV positive and negative participants giving a prevalence of 25.2% and 13.3% respectively.This was statistically different from each other ($p<0.001$). Coccidian parasites (I. belli ($p<0.001$), Cryptosporidium ($p = 0.032$)) and S. stercoralis ($p<0.001$) infections were exclusive to HIV positive participants. The prevalence of G. lamblia was common among both study groups having prevalence of 11.4% and 11.8% in HIV positive and negative participants. Infections with Cryptosporidium was common with participants in rural dwellings ($p = 0.039$). I. belli ($p<0.001$), Cryptosporidium ($p = 0.04$), G. lamblia ($p<0.001$) and S. stercoralis ($p = 0.026$) were significantly associated with diarrhoea stools. I. belli and Microsporidia infections were associated with CD4 T-cell count of $\leq$200 cells/μl. Diarrhoea was associated with participants with CD4 T-cell count of $\leq$50cells/μl.

Conclusion: This finding showed that intestinal parasitic infections have a higher prevalence in HIV positive patients than HIV negative patients with coccidian parasites and S. stercoralis infections occurring exclusively in HIV positive patients. As far as HIV/AIDS disease coexist with intestinal parasitic infections in the sub-saharan region it will be important to use more sensitive diagnostic techniques such as PCR, Isoenzyme Analysis and Antigen detection which has proven to be a very effective means of diagnosing intestinal parasites

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Eosinophil as a marker to distinguish sepsis from systemic inflammatory response syndrome (SIRS) patients in intensive care unit

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Background: Sepsis, a serious systemic inflammation response against infections, is the cause of morbidity and mortality, especially in intensive care unit (ICU). Sepsis and systemic inflammatory response syndrome (SIRS) have similar clinical sign, so a parameter needed to differentiate both for early diagnosis and therapy.Procalcitonin (PCT) is expensive and relative difficult to performed especially in Makassar, Indonesia. Eosinophil, a routine hematologic test, is cheap and easy to perform manually or automatically. Previous studies showed that eosinophenia was a moderate marker to differentiated SIRS and sepsis in ICU.

Methods: A cross sectional study performed using 108 samples suspect sepsis patients newly admitted to ICU at Dr. Wahidin Sudirohusodo Hospital, Makassar, Indonesia, during October 2009-March 2010. Control group were healthy persons who had medical checkup ($n = 20$). Samples were grouping into the control group, SIRS, and sepsis (subgroup sepsis, severe sepsis and shock sepsis). Eosinophil count performed by flow cytometry (Sysmex XT-2000i), PCT concentration measured by Sandwich ELISA (Elecsys 2010).

Results: The study result showed that the mean of eosinophil count of sepsis (23$\pm$46 cells/mm3) lower than SIRS (143$\pm$101 cells/mm3), $p<0,001$. In discriminating SIRS and sepsis groups, the AUC of eosinophils was 0,91 (95% CI, 0,86-0,96). Eosinophils <40 cells/mm3 has sensitivity 87.7%, specificity 85.7%. Procalcitonin in sepsis (37.665 $\pm$ 55.221 ng/ml) higher than SIRS (1.448 $\pm$ 1.363 ng/ml), $p = 0,000$. Procalcitonin at cut off 2 ng/ml has sensitivity 75%, specificity 77%. The best cut off point of PCT in discriminating SIRS and sepsis was 1,20 ng/ml on AUC 0.85 (95% CI, 0,78-0,92), $p = 0,000$. Mann Whithney test showed a significant different of eosinophils and PCT between SIRS and sepsis ($p = 0,000$ and $p = 0,001$). Procalcitonin can distinguish sepsis in sub groups ($p = 0,000$)).

Conclusion: In conclusion, eosinopenia (<40 cells/mm3) is a good marker to distinguish SIRS and sepsis patients in ICU, but could not distinguish sepsis, severe sepsis and shock sepsis. Procalcitonin at *cut off* 1,20 ng/ml is a good marker to distinguish SIRS and sepsis patients in ICU and can distinguish sepsis, severe sepsis and shock sepsis. Eosinophenia can be used as a simple sepsis marker which can be performed even in suburban area.

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