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Treatment effects of recombinant human soluble thrombomodulin in patients with septic urinary tract infection-induced disseminated intravascular coagulation

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Background: Urinary tract infection (UTI) complicates sepsis and/or disseminated intravascular coagulation (DIC) when the disease becomes severe; mortalities of septic DIC is reported to reach to 37% despite current therapy. Cross-talk between the coagulation system and inflammatory reactions during sepsis causes organ damage followed by multiple organ dysfunction syndrome or even death. Therefore, anticoagulant therapies have been expected to be beneficial in the treatment of severe sepsis. Recombinant human soluble thrombomodulin (rhTM) binds to thrombin to inactivate coagulation, and the thrombin-rhTM complex activates protein C to produce activated protein C. The purpose of this study was to examine the efficacy of rhTM for treating patients with septic UTI-induced DIC.

Methods & Materials: This study comprised 45 patients with septic UTI-induced DIC. All patients fulfilled the criteria of severe sepsis and the International Society on Thrombosis and Haemostasis criteria for overt DIC. The initial 25 patients were treated without rhTM (control group), and the following 20 consecutive patients were treated with rhTM (0.06 mg/kg/day) for six days (rhTM group). The primary outcome measure was 28-day mortality. Stepwise multivariate Cox regression analysis was used to assess which independent variables were associated with mortality. Comparisons of Sequential Organ Failure Assessment (SOFA) score on sequential days between the two groups were analyzed by repeated measures analysis of variance.

Results: Cox regression analysis showed 28-day mortality to be significantly lower in the rhTM group than in the control group (adjusted hazard ratio, 0.301; 95% confidence interval, 0.104 to 0.867; P = 0.028). SOFA score in the rhTM group decreased significantly in comparison with that in the control group (P = 0.029). In the post hoc test, SOFA score decreased rapidly in the rhTM group compared with that in the control group on day 1 (P < 0.05).

Conclusion: We found that rhTM administration may improve organ dysfunction in patients with septic UTI-induced DIC. Further clinical investigations are necessary to evaluate the effect of rhTM on the pathophysiology of septic UTI-induced DIC.

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Re-emergence of yellow fever in Kedougou, Southeastern Senegal in 2010-2011

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Background: Yellow fever (YF) is an acute infectious viral disease transmitted by *Aedes*mosquitoes that causes 200,000 human cases and 30,000 deaths annually in tropical Africa and South America. Human cases follow periodic emergence YF virus (YFV) from its sylvatic cycle in non-human primates. In Senegal, the Kedougou region is an emergence zone where amplifications of sylvatic YFV have been reported at 4 to 6 years interval. Since 2007, gold mining has become the main economic activity in Kedougou and has led to increased urbanization, more activity in the forest and massive immigration of non-immune populations. In association with these disruptions, a YF outbreak occurred in Kedougou in 2010. In this paper we report epidemiological, virological and entomological information about this outbreak.

Methods & Materials: An human surveillance of Acute Febrile illnesses were implemented in 7 clinics in Kedougou region. Also entomologic and monkey surveys were carried out in the same area. Human and monkey samples were tested for YFV- PCR and IgM and IgG YF antibodies by ELISA. Mosquitoes were sorted in monospecific pools and tested by YFV RT-PCR.

Results: From January 2010 to December 2011 9,213 patients were enrolled and 13 were confirmed as YF (0.14%), including 12 IgM antibody positives, and 2 PCR positive and 10 probable cases. Three thousand four hundred and seventy seven (3,477) and 1,793 mosquito pools were respectively collected and tested for YFV by PCR and virus isolation in 2010 and 2011. YFV was detected in 67 pools of mosquitoes (1.9%). Additionally, 378 monkeys were screened for anti-YFV IgM and neutralizing antibody; one monkey sample presented anti-YFV IgM, and seroprevalence of YF neutralizing antibodies among juvenile monkeys increased from 4 to 42% between 2010 and 2011. Entomological investigations during the YF outbreak revealed that *Ae. aegypti* was present in all localities;*Aedes furcifer* was the predominant species and Breteau indexes were well above the epidemic threshold.

Conclusion: Increased urbanization and migration of susceptible populations may favor adaptation of *Ae Aegypti* to domestic context and the presence of infected Aedes furcifer that would lead to intermediate or urban transmission of YFV.

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