Selectins in normal pregnancy, pre-eclampsia and missed abortus

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Abstract—Selectins, are known to be increased in the serum of patients with pre-eclampsia, indicating that these molecules are possible markers of endothelial cell injury. In this study, we investigated P, E and L selectin levels in normal pregnancy, pre-eclampsia, and missed abortus. Plasma P and L selectins levels were significantly higher in normal pregnancy and pre-eclampsia than healthy controls; but plasma concentrations of E selectins were not different between these groups. Plasma P selectin was significantly higher in pre-eclampsia than normal pregnancy. Plasma concentrations of all selectins were significantly higher in missed abortus than healthy control. L selectin levels were higher in pre-eclampsia and missed abortus than normal pregnancy.

We found the levels of selectins were increased in pre-eclampsia and missed abortus. Although selectins were suspected to play a role in the pathogenesis of pre-eclampsia, in conjunction with previous studies, we thought that elevated selectin levels are a non-specific consequence of endothelial injury rather than being a cause.

Key words: Selectins; pregnancy; pre-eclampsia; missed abortus.

INTRODUCTION

Pre-eclampsia is a complication of pregnancy that may have serious consequences for the mother and the unborn child [1, 2]. The incidence of pre-eclampsia is approximately 5% of all pregnancies. Although the exact cause of pre-eclampsia remains to be elucidated, evidence shows that platelets and damaged endothelium play a substantial role in the pathogenesis of this disease [3]. Selectins are adhesion molecules regulating interactions of the leucocytes, platelets and endothelial...
cells [4]. These molecules are involved in leucocyte migration, homing and inflammation, all of which are essential components of the immune response [5]. Circulating leucocytes bind to the selectins expressed by activated endothelium and thereby leucocyte migration occurs [6, 7]. The present study investigated plasma P, E and L selectin levels in patients with normal pregnancy, pre-eclampsia and missed abortus.

PATIENTS AND METHODS

The study population consisted of 56 women patients with pregnancy (mean age 28, min = 19, max = 36 years). Patients were separated into 4 groups. Group I patients had normal pregnancy (n = 15), group II patients had pre-eclampsia (n = 15), group III patients had missed abortus (n = 11), and group IV comprised 15 healthy women (mean age 29, min = 18, max = 35 years) as a control group. Gestational age was determined by the date of the last menstrual period in combination with ultrasonographic examination at 13 weeks’ amenorrhea. Exclusion criteria were as follows: chronic inflammatory disease, diabetes mellitus, collagen tissue disease, acute and chronic infections, recent history of anti-coagulant and anti-aggregant treatment.

Pre-eclampsia was defined as described in the classification approved by the International Society for the Study of Hypertension in pregnancy. Under this classification, hypertension is defined as one diastolic blood pressure reading above 110 mmHg or two consecutive diastolic blood pressure readings 90 mmHg 4 hours apart. Blood pressure was measured with a standard sphygmomanometer. Significant proteinuria is defined as 300 mg total protein in a 24-hour urine collection or, if this is not available, 1+ proteinuria by dipstick on 2 consecutive occasions 4 hours apart. Pre-eclampsia is defined as hypertension in combination with proteinuria developing after 20 weeks’ gestation in a previously normotensive, nonproteinuric woman. Missed abortion was defined as retaining of dead fetus for at least 4 weeks before 20 weeks of gestation in patients. In patients without previous examination, approximate duration of death was estimated by ultrasonographic findings.

Blood samples were taken after 20 weeks of gestation in normal pregnancy and pre-eclampsia. Peripheral venous blood samples were taken between 8 and 10 a.m. into 3.8% 1:9 trisodium citrate containing vacuum tubes without venous occlusion. The blood samples were centrifuged immediately at 2000 g for 15 minutes and then the plasmas were stored in several aliquots at −70°C until assayed. Serum E selectin, P selectin and L selectin were measured by Sandowich ELISA using Bender Med ELISA kit (sE, sP, sL selectin ELISA, Bender MedSystems, Vienna, Austria). The intra-assay coefficient of variation was 6%, the inter-assay coefficient of variation 8%, computed from results of pathological plasma samples in our laboratory. Leukocyte, platelet counts were detected by an auto-analyser.