The count of blood platelets and sex in humans

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Summary. It has been shown that there is a higher count of blood platelets and thrombopoietic activity of plasma in women than men.

It is generally accepted that the blood count in humans is the same in both sexes. However, recently Dawson et al. found that there is some differences between men and women[1]. These observations are not supported by the estimations of thrombopoietic activity of plasma. It is unquestionable that this hormone is responsible for the production of blood platelets[2]. The aim of our studies was to compare the blood platelets count in men and women and to determine thrombopoietic activity in plasma in both groups.

Materials and methods. The investigations were carried out in 50 men and 50 women, aged 19–62 years. The count of blood platelets was calculated according to Dacie's method[3]. Venous blood was collected in plastic tubes containing EDTA from healthy human beings, at 8–10 a.m., over a period of 1 month (January 1977). Donors were deprived of food and water about 12 h before blood sampling. Thrombopoietic activity of plasma was determined in 10 men and 10 women from the same groups using ^{75}selenomethionine[4]. Activity of hormone was expressed in cpm/mg of platelet protein. Protein was determined according to Lowry[5].

Results. Figure 1 shows the count of blood platelets. In men we have found from 105,600 to 184,800/mm^3. A higher number of these cells was found in women, 134,200–249,000/mm^3. The mean values in men were 142,800 and in women 179,900. The difference is statistically significant $0.05 > p > 0.025$.

Figure 2 illustrates the thrombopoietic activity of plasma. It is evidently higher in women 663 cpm/mg platelets protein in comparison to men 467; this difference is also statistically significant $0.05 > p > 0.025$.

Discussion. The main data from our investigations are: the higher count of blood platelets and thrombopoietic activity in women than men. Thrombopoietin is responsible for the production of blood platelets. So it is resonable that the level of this hormone is higher in women than in men. No authors investigated the half-life of blood platelets separately in men and women so there is no information of a difference between the sexes. The question arises why sex may determine the blood count in peripheral blood? We can suppose that some effects may be joined with another hormone profile in both groups, altho no literature data are available. On the other hand, McBride and Snodgrass[6] showed that total platelet count measured at intervals during 100 normal menstrual cycles in normal women showed no significant changes in relation to the menstrual cycle. Women are more exposed lose of blood than men, so the increased level of blood platelets may be a compensatory mechanism.

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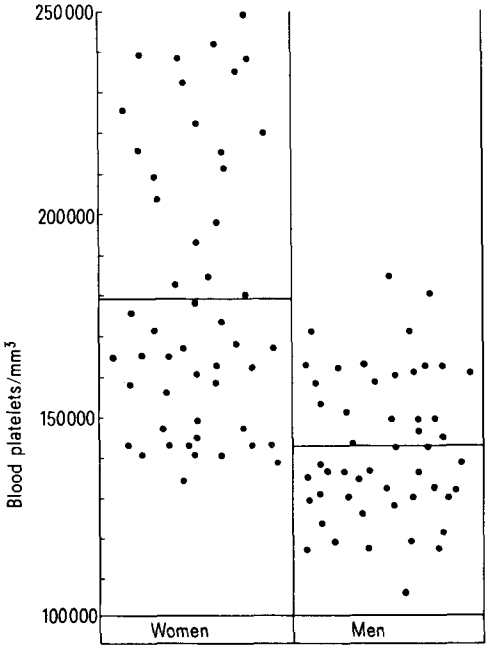

Fig. 1. Count of blood platelets.

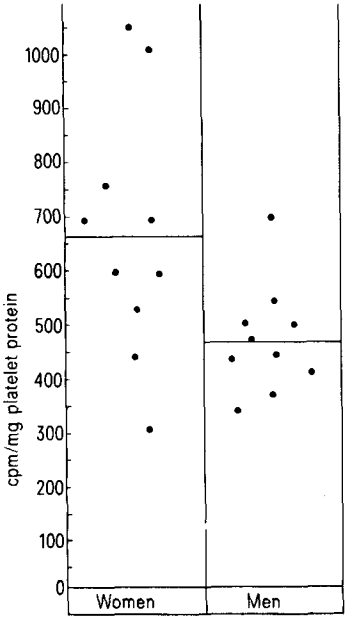

Fig. 2. Thrombopoetic activity of plasma.