The value of leucocyte alkaline phosphatase determinations in the diagnosis of ectopic pregnancy

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SYNOPSIS Leucocyte alkaline phosphatase activity has been determined in a normal group, a group of pregnant patients, and a group of patients with ectopic pregnancy.

A great rise in alkaline phosphatase occurred in pregnant patients in their third trimester, but the results were only slightly raised in the ectopic group. Five of six consecutive cases gave results which fell within the normal range. The method is not considered to be of value in the diagnosis of ectopic pregnancy.

A rise in leucocyte alkaline phosphatase activity has been shown to occur during normal pregnancy (Quigley, Dawson, Hyum, and Custer, 1960), and Silva and Corbit (1961) claimed that this rise was of value in the diagnosis of ectopic gestation. The present investigation was to decide whether quantitative leucocyte alkaline phosphatase determinations were of clinical value in cases in which ectopic pregnancy was suspected.

METHOD OF STUDY

The method for the determination of leucocyte alkaline phosphatase was that described by Leonard, Israëls, and Wilkinson (1958) which was a modifi-

cation of Gomori's original cytochemical technique for demonstrating alkaline phosphatase.

The system of scoring was that of Kaplow (1955) in which 100 polymorphonuclear leucocytes were counted, individual cells being graded 0 to 4.

Observations were made on the peripheral blood films of 42 normal adults of both sexes. The blood films of 34 normal pregnant women, in their third trimester, were then scored. Alkaline phosphatase counts were performed on 10 patients who were diagnosed clinically as cases of ectopic pregnancy.

RESULTS

The collected results of the normal control group are seen in Figure 1. The mean was 41.0 (S.D. 22.7).

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TABLE I

CASES DIAGNOSED CLINICALLY AS ECTOPIC PREGNANCY				
	Age (yr.)	White Cell Count (per c.mm.)	Leucocyte Alkaline Phosphatase Score	Ultimate Diagnosis
H/W	34	8,000	88	Tubal pregnancy
H/W	22	9,000	54	Primary ovarian pregnancy
H/W	29	9,000	33	Tubal pregnancy
H/W	31	11,000 (78% polymorphs)	74	Tubal pregnancy
H/W	21	9,500	58	Tubal pregnancy
H/W	36	9,500	128	Tubal pregnancy
H/W	25	12,000 (84% polymorphs)	62	Normal pregnancy, ectopic excluded by E.U.A.
H/W	20	8,000	44	Chronic appendicitis, haemorrhagic corpus luteum
H/W	22	7,500	24	Vaginal ulceration (self inflicted)
H/W	27	8,000	200	Normal pregnancy, pyelitis
			124

FIG. 1.

FIG. 2.

The scores on normal pregnant women of over 30 weeks' gestation are seen in Figure 2. The mean was 240, S.D. 47.6. It will be seen that there is a highly significant rise in the leucocyte alkaline phosphatase in the pregnant group. The results of the ectopic group are given in the Table. It will be seen that five of the six true ectopic pregnancies in this group gave results which lay within the normal range. Of the original 10 surveyed the highest reading, *i.e.*, 200, occurred in a patient who proved later to have a normal uterine pregnancy. Two of the original 10 of this group were found to have normal uterine pregnancies and two other patients were found to be suffering from some other disorder not related to pregnancy. These four were then excluded from the group. When the group is considered as a whole there is a slight, but significant, rise in alkaline phosphatase (the mean was 72.5, S.D. 30.3).

DISCUSSION

If it had been possible to show that the method of determination was of value in the diagnosis of ectopic pregnancy it would have been of considerable clinical importance. The fact that five of the first six cases of proved ectopic gestation gave results within the normal range showed that the method in our hands was not dependable for diagnosis. The slight rise in alkaline phosphatase activity when the group is considered as a whole is not of clinical value. The method has, therefore, been abandoned as a routine test in our departments.

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