Mean Total and Differential Leucocyte Counts in Some African Populations Compared with Wintrobe's Norms

Source	Subjects (No.)	Total Leucocytes ($\times 10^9/l$)	Neutrophils ($\times 10^9/l$)	Lymphocytes ($\times 10^9/l$)	Eosinophils ($\times 10^9/l$)	Monocytes ($\times 10^9/l$)
Kampala, Hawgood ¹	Outpatients (88)	5.30 (2.80-9.20)*	2.25 (0.80-5.05)*	2.20 (1.15-3.85)*	0.56	0.27
Nairobi, Kasili <i>et al.</i> ²	Blood donors (152)	5.00 (2.00-10.70)†	2.11 (0.36-5.62)†	2.43 (0.81-5.45)†	0.33 (0.2-1.1)†	—
Lusaka, Ezeilo ³	Blood donors (133)	5.16 (2.60-7.70)†	1.94	2.67	0.45	—
Kampala, Shaper and Lewis ⁴	Blood donors (250)	5.10 (1.90-8.30)*	1.96 (3.20-3.60)*	2.10 (0.74-3.56)*	0.72 (0.2-2.6)*	0.25 (0.0-0.55)*
Bamako, Rougemont <i>et al.</i> ⁵	Unselected adults (555)	5.51 $\pm$ 1.80‡	2.33 $\pm$ 1.37‡	2.47 $\pm$ 0.99‡	0.83 $\pm$ 0.74‡	0.19 $\pm$ 0.20‡
U.S.A., Wintrobe ⁶	Medical students (105)	7.78 $\pm$ 1.46‡	4.30 $\pm$ 1.21‡	2.71 $\pm$ 0.61‡	0.23 $\pm$ 0.17‡	0.50 $\pm$ 0.18‡

*95% confidence limits.

†Range.

‡Mean $\pm$ S.D.Conversion: SI to Traditional Units—W.B.C.: $1 \times 10^9/l = 1000/mm^3$.

from African countries are not rare in Europe this matter seems to be of some practical interest.—We are, etc.,

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Effects of Exertion on Hormone Secretion

SIR,—Strenuous exercise increases plasma renin activity (P.R.A.) to a degree that depends upon the intensity and type of the exercise.¹ We have reported the changes in plasma cortisol and testosterone levels in a group of Finnish sportsmen (30-40 years old) and one 58-year-old Greek who all ran a non-competitive marathon in 210-285 min over the classical course in Athens (29 June 1974, p. 726). As these data suggested a correlation between physical fitness and changes in hormone profiles we investigated whether P.R.A. had undergone similar changes.

The results for P.R.A. obtained by radio-immunoassay² and for plasma osmolality

obtained with a Fiske osmometer are shown in the table. The P.R.A. control values, taken in the upright position, were slightly higher at 1200 hr than at 1600 hr, in accordance with the circadian rhythm of P.R.A.³ After the run P.R.A. increased highly significantly ($P < 0.0005$) except in the fittest participant (no. 12), who ran the marathon in only 180 min and arrived at the finish in exceptionally good condition. Plasma osmolality increased highly significantly after the run ($P < 0.005$). A similar increase of P.R.A. has been found in 22 skiers after a 70-km cross-country ski race.⁴

We believe that the increase in P.R.A. in response to such severe exercise reflects a meaningful reaction tending to restore the balance of body fluids and electrolytes by renin-angiotensin-stimulated release of aldosterone. The lack of rise of P.R.A. in the fittest subject may be due to his larger blood volume, resulting in a smaller reduction of the circulating blood, and to a variety of adaptive adjustments resulting in a lesser degree of sympathetic discharge during strenuous exercise than in the other runners.—We are, etc.,

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Participant No.	Control Samples		After Marathon at approx. 1600 hr
	1200 hr	1600 hr	
<i>Plasma renin activity (ng ml⁻¹h⁻¹)</i>			
1-11	0.89 ± 0.18 (S.E.M.)	0.66 ± 0.11	5.75 ± 0.74 (S.E.M.)
12	1.09	N.D.	1.18
14 (Greek)	N.D.	0.19	4.41
<i>Plasma osmolality (mmol/kg H₂O)</i>			
1-11	285.1 ± 12.5 (S.E.M.)	300.0 ± 3.4 (S.E.M.)	314 ± 1.8 (S.E.M.)
12	305	—	312
14 (Greek)	N.D.	—	320

N.D., = not detected

Rubella in Pregnancy: a Difficult Diagnosis

SIR,—When it can be proved that a woman has been infected by rubella virus in early pregnancy it is usual to recommend termination. We wish to report a case in which it was difficult to make a clinical decision for or against this measure.

The patient had a rubella haemagglutination inhibition (H.A.I.) titre of less than 1/16 in 1973 when in her second pregnancy. In this locality more than 90% of women with such a finding are considered susceptible to infection since they respond serologically to rubella vaccination. She presented again in January 1975 in the 10th week of her third pregnancy, with a history of close and continuous contact with rubella (her own daughter) five weeks previously. Unfortunately there was no recorded evidence that she had been immunized after her second pregnancy. Her rubella H.A.I. titre was 1/32 and the complement fixation (C.F.) titre was 1/10. Identical results were obtained two weeks later. These low titres did not appear to be consistent with recent infection. Nevertheless, she was apparently susceptible at the beginning of this pregnancy (as judged by the 1973 sample), had been in close contact with rubella in the early weeks, and at the 10th week did have measurable antibodies. It seemed possible, therefore, that she had contracted the disease in early pregnancy. Termination was advised. This was performed at the 14th week using a combination of intravenous prostaglandin E_2 and oxytocin. The patient made an uneventful recovery.

The serum collected in 1973 was retested in parallel with a sample taken before termination. The H.A.I. titre of the earlier specimen was confirmed as less than 1/16 and the antibody level of the last serum collected in the pregnancy was again 1/32. Tests for neutralizing antibody and for rubella-specific IgM and IgA were not performed. The fetus and placenta were tested in Vero and RK13 tissue cultures. Rubella virus was not recovered.

This confusing clinical problem re-emphasizes the need for puerperal immunization of "susceptible" women. This may be overlooked very easily when a patient is discharged early in the post-partum period, as happened in this case. It must be appreciated that a laboratory handling large numbers of antenatal sera each week selects women most likely to benefit from post-partum immunization only by employing a screening dilution of serum that will discriminate between those who are "certainly immune" and those who are "likely to be susceptible." Women whose antibody titres lie close to the borderline are reported as susceptible. A few women have low antibody levels and have recordable H.A.I. titres of less than 1/16 but are in fact immune.

In retrospect it seems likely that a non-infected pregnancy was terminated, but we are unable to explain with certainty the rising titre between 1973 and 1975. Such changes are not caused by other infections or by pregnancy. It is possible that the patient was immunized by her family doctor after her second pregnancy (she changed doctors at this time and there was some confusion about postnatal care). The results could be due to slight variations in samples collected from an immune individual with very low levels of antibody (possibly boosted by close contact with her daughter's uninvestigated illness) or from a subclinical infection occurring between the second and third pregnancies.

Different interpretations of the laboratory results in this situation caused considerable difficulty. We should be interested to know