

Observations on the Cystic Stage of *E. histolytica* in Abscesses of the Human Bowel. (18645)

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The exact place and formation of cysts of *E. histolytica* in human infections has not been decided. Most text books venture the opinion that the cystic stage is formed in the fecal stream and not in the bowel wall, where this ameba species causes abscess formations followed by ulcerations. Warthin(1) described the presence of cysts and pre-cysts of *E. histolytica* in amebic lesions of the testis and of the epididymis. No other references to such observations were found by this worker in the medical literature. Using a technic consisting of careful cleansing of the fecal stream overlying amebic abscesses, by means of aspiration employing a woven catheter and ear, nose and throat suction machine, followed by additional cleansing by aspiration with 1 cc bacteriologic pipette, the writer aspirated material containing cysts of *E. histolytica* from abscesses in the bowel wall of 25 patients with intestinal amebiasis.

Fig. 1 represents cysts of *E. histolytica* pipetted from a minute rectal abscess in a 26-year-old white male with chronic amebiasis. This material was stained with modified iodine

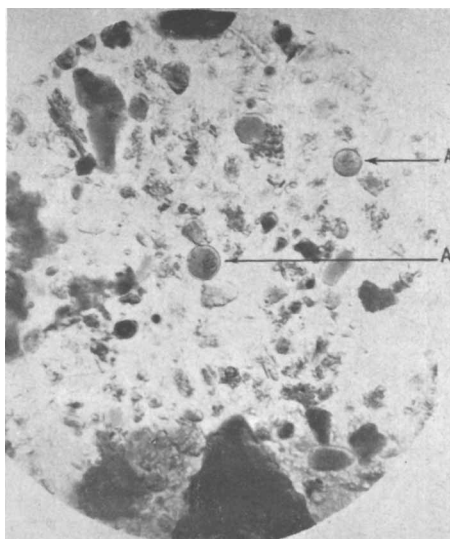


FIG. 1.

Cysts of *Endamoeba histolytica* aspirated from military abscess of the human bowel. ($\times 100$).
A. Cysts of *Endamoeba histolytica*.

stain and photographed in a wet preparation. These findings suggest that the cysts of *E. histolytica* may be formed within the tissues rather than in the fecal stream.

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Blood Volume of the Normal Female as Determined with P32 Labeled Red Blood Cells.* (18646)

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During the course of an investigation of the changes in the blood volume in pregnancy it became apparent that a re-evaluation of the blood volume standards in normal women was necessary.

As measured with the dye T-1824 in normal males and females, the blood volume and plasma volume were significantly lower in the female(1,2), and with the red dye methods there was no marked difference between males and females(3,4). Only 2 blood volumes were reported in normal females using the

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washed P32 labeled red blood cells(5) and none using radioactive iron. Reeve and Veall (6) did not state the sex of their normal subjects. The present study shows that the blood volume per kilogram of body weight of the normal female is slightly lower than the normal male due principally to a lower total red cell volume and due to the lower average density of the female(7).

Methods. The blood volume was determined in 16 healthy females on the nursing and office staff of the hospital with P32 labeled red cells using a modification of the Hevesy and Zerahn method(8,9). The average age of these subjects was 31.3 years and the range was 22 to 48 years.

Results. The blood volumes are presented in Table I.

Discussion. The average blood volume of the normal female is 64.4 cc/kg as compared with 68.6 cc/kg body weight in the male. The average total red cell volume is 27.0 cc/kg in the female as compared with 29.9 cc/kg in the male(9). The difference in the plasma volume was not significant; the differences in average total blood volume and average total red cell volume are statistically significant.

A part of this decrease in total red cell volume may be related to the fact that the index used is cc/kg body weight. Studies of total body water show that in women the per-

TABLE I. Normal Females.

Subject	Body wt, kg	Blood vol.*	Total red cell vol.*	Plasma vol.*	Hematocrit
1	52.7	63.4	27.6	35.5	43.5
2	66.8	57.5	24.1	33.4	42
3	65.9	49.6	22.1	27.3	44.5
4	49.5	65.4	24.2	41.2	37
5	57.3	60.5	25.4	35.1	42
6	81.4	66.2	25.2	40.4	38
7	54.5	51.2	21.1	29.9	41
8	44.5	77.5	30.9	46.6	40
9	61.4	71.1	32.7	37.7	46
10	53.6	63.3	26.6	36.1	42
11	59.1	64.5	27.7	36.1	43
12	57.3	65.6	28.8	36.1	44
13	56.8	74.3	31.9	41.7	43
14	62.7	61.1	26.9	33.6	44
15	50.5	64.9	25.9	38.3	40
16	51.8	74.9	31.5	43.4	42
Avg		64.4	27.0	37.0	42
		±1.9†	±0.84†	±1.19†	±0.61†

* In cc/kg body wt.

† Stand. dev. of the mean.

cent of the body which is water is less than in males; this is due to the greater percentage of adipose tissue which contains less water than the other tissues(7). It is probable that calculated on the basis of "fat free" body weight, the total red cell volume of the female would be in better agreement with that of the male. In debilitating disease states the total red cell volume of the female probably should be compared to the normal male because of the loss of body fat in these conditions.

These studies show that blood volume difference between males and females is not as great as has been reported with Evans blue dye method, and is in good agreement with the values reported with the red dye method.

Conclusion. As measured in 16 normal females with P32 labeled red blood cells, the blood volume was 64.4 cc/kg; total red cell volume was 27.0 cc/kg with the plasma volume 37.0 cc/kg body weight. These values for the total red cell volume do not differ markedly from those observed in a similar group of males when the difference in total body fat in the two sexes is taken into consideration.

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