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TITLE: Changes in the morphological state of the blood brought about by UHF

SOURCE: Gigiyena i sanitariya, no. 6, 1965, 95-96

TOPIC TAGS: microwave, UHF, biological effect, blood morphology, reticulocyte

ABSTRACT: The author studied 100 people who were chronically exposed to UHF (frequency and radiation intensity not given). This group was made up of researchers and industrial workers who had been exposed to UHF less than 3 years (37 people), 3—5 years (28 people), and over 5 years (35 people). Ages ranged from 20—45 years. A second group of 103 people served as a control in the study. The 100 test subjects were divided into 2 groups: group 1—those who were exposed daily to intensities slightly exceeding the permissible threshold value, and group 2—those who were exposed to intensities somewhat less than the permissible threshold value (no numerical values given). The subjects often complained of general weakness, lowered working capacity, increased irritability, headaches, dizziness, and unpleasant sensations in the heart region. Objective examinations revealed functional disruptions

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characteristic of autonomic disruption with a predominance of tonus in the parasympathetic branch. Cardiovascular changes included pulse lability (inclination toward bradycardia), dullness of heart tones, and functional systolic noise. These changes often coincided with lowered arterial pressure and indices of autonomic dystonia. Studies of blood morphology concentrated on qualitative and quantitative indices including the number of reticulocytes and basophile granules. There was an insignificant change in erythrocyte content ($p > 0.5$) in people exposed to UHF. The number of reticulocytes was increased (variation 10—20%) in 14% of the subjects exposed to UHF, compared to 8.7% of the control group. Reticulocytosis was most often observed in subjects who had been exposed to UHF for more than 3 years. Of particular interest were changes in red blood as reflected in the quantitative increase in basophile granules. Basophilia is often encountered in anemia, malaria, and particularly in lead and benzol poisoning. A quantitative increase in basophile granules is observed in personnel exposed to ionizing radiations. Their presence often precedes the development of hypochromic anemia. In 30% of the cases, erythrocyte sedimentation was slowed. This is most likely associated with the condition of the autonomic nervous system, in particular, autonomic neurosis which leads to slowed sedimentation. No cases of increased sedimentation were noted. Cases of leukopenia and leukocytosis were almost equivalent in test and control groups.

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Table 1 of the Enclosure shows basophile granule content in test subjects. The table indicates that basophile granules should be considered as one of the manifestations of the effects of UHF. It is suggested that basophile granule determinations be conducted periodically on people working around UHF sources. Orig. art. has: 1 table. [CD]

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Table 1. Basophile content in workers exposed to UHF

Group no. (and no. of people)	Lack of basophile granules	Basophile granule content per 10,000 normal erythrocytes	
		1—10	10+
1 (33)	6	16	11
2 (67)	15	29	23
Total	21	45	34

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