

Functional Disturbances in the
Gastrointestinal Tracts of People Working
in a Superhigh Frequency Field

Glover ✓
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} 1962

#2565
Army (J-9780)

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The effect of a superhigh frequency field on a human being may produce changes in the organism which, depending on the exposure and radiation intensity, may be reversible or stable. The effect of a superhigh frequency field on the nervous, cardiovascular and hemopoietic systems has in the main been studied. There are very few published data on the affection of the digestive system, and these have been received primarily in experimental investigations on animals. In a histological examination of the gastrointestinal tract of animals killed by radiation with decimetric waves Boysen (1953) found dystrophic changes in the epithelial cells. A. M. Grebeshechnikova (1964 and 1966) observed a decreased secretion of gastric juices and inhibited evacuation function of the gastrointestinal tract of animals subjected to the effect of a superhigh frequency field in the meter and decimeter range for a lengthy period of time. There was little change in the acidity and digestive force of the gastric juice.

The purpose of this investigation was to study the condition of the gastrointestinal tract of people working under the effect of a low intensity (centimeter and decimeter bands) superhigh frequency field for a long period of time. A group of radar specialists was subjected to a thoroughgoing medical examination, first as outpatients and then in a medical institution. The control group consisted of 30 people not subjected to the effect of a superhigh frequency field; in age and daily living conditions they were similar to the people of the experimental group. The majority of the test subjects were aged 20 to 40. Most of them had worked with generators of a superhigh frequency field for more than three years (and nine of them for 10 years and longer). The superhigh frequency generators were operated for periods of time ranging from two to nine - fifteen hours a day.

All the test subjects were examined by a therapist, neuropathologist, ophthalmologist and stomatologist. Dyspeptic disturbances were found in 20 of the radar specialists: heartburn, regurgitation and nausea in eight, loss of appetite in four, meteorism in three, pain in the epigastric region in six and in the right hypochondrium in five. Four people of the examined control group complained of heartburn and regurgitation, two of pain in the epigastric region and one of pain in the right hypochondrium.

Edematous gums were found in six people, hemorrhagic diathesis in four and a coated tongue in 15. Painful sensitivity to abdominal palpation in four, and the border of the liver (painless) was found near the right edge of the arcus costarum in nine people. The following investigations were also carried out: the taste analyzer by the commonly accepted drop method, and a histological examination of the cheek and lingual mucosa impressions (they were stained by Romanovskiy's method). The gastric

leucopedesis was determined by the Melangeur method in both secretion phases. A fractional investigation was also made of the duodenal and stomach content (the latter by the Veretyanov-Novikov-Kyasoyedov method). The evacuative function of the gastrointestinal tract was determined by the use of large-frame fluorography (30 minutes, 1½, 2½, 4 and 24 hours after the intake of a contrast suspension).

A distorted taste for salty foods and a tendency to a higher gustatory sensitivity was found in the majority of the radar station specialists (this was not observed among the members of the control group). A histological examination of the cheek and tongue mucosae impressions revealed cells of a multilayer squamous epithelium without any signs of degenerative changes.

A fractional investigation of the stomach content during the first phase found a normal secretion in three cases, increased in 18, and decreased in nine cases, and in the second phase the number of cases were six, 11 and 13 respectively.

A normal acidity of the gastric juice was found in nine persons, increased in ten, and decreased in 11 persons, while six people were found to have no free hydrochloric acid at all. In 26 cases there was no parallelism between the amount of secreted gastric juice and the concentration of hydrochloric acid. Gastric leucopedesis was found to be normal in both secretion phases in nine of the 16 test subjects, and in seven it was higher in different phases. The uropepsin content was determined West's method in 22 people: it was found to be normal in eight, increased in eight and reduced in six. No pathological changes were observed in a coprological examination, a blood test, a urinalysis, and an examination of the duodenal contents. A stomach roentgenoscopy of 10 test subjects failed to find any organic changes in the stomach or duodenal bulb, but the majority of the people revealed the following functional changes: an accelerated evacuative function of the stomach, a higher stomach tonus and irritated rapidly-evacuating duodenal bulb, an inhibited evacuative stomach function with an initial 10-minute spasm of the pylorus, a higher stomach tonus with an initial pylorus spasm.

An investigation of the evacuative function of the gastrointestinal tract by the use of large-frame fluorography found a lower tonus and evacuative stomach function and dyskenesia of the small intestine of the hyper- and hypokinetic type in 16 of the 22 radar specialists. The mentioned functional changes on the part of the gastrointestinal tract in most of the people occurred against a background of asthenia and vegetative dystonia.

It is our opinion that all the people working at radar stations require continuous observation and control of the functional condition of their gastrointestinal tract.

