

The task of this work was to evaluate the possibility of using microwave sensors to assess hydration status in dialysis patients. For this purpose it was necessary to evaluate existing methods of monitoring fluid balance and determining the optimal postdialysis weight (dry weight) in dialysis patients, become acquainted with contemporary equipment techniques for monitoring blood volume and study the possibilities of microwave technology for monitoring of changes in tissue hydration. To confirm the usefulness of this original method was performed in GHz measurements in vivo, which was divided into three parts - measuring a group of healthy subjects, measuring a group of dialysis patients during hemodialysis (HD) and additional measurements. When the sensor were applicated on the forearm changes in resonant frequency, quality factor or Q-factor and the amplitude changes were observed. In healthy subjects assessed the effects of sex, age and BMI (body mass index). In dialysis patients were evaluated correlations of observed GHz parameters changes compared with data obtained by ultrafiltration indicated by dialysis machine. Both groups were supplemented by bioimpedance spectroscopic examination. Additional measurements was verifying factors that could affect the reproducibility and the resulting value (the temperature of the body in place attach the sensor, measurements at different sites in the body). Although results of this study are not entirely clear and from the measured values we can not comment a specific numerical value of patient's overhydration, it shows very good reproducibility of measurements, regular repeating of some trends and it is worth noting several interesting phenomena (the effect of temperature on measurements) which must continue to investigate.