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Research Subject	Electromagnetic environment in medicine, Safe and secure introduction of wireless communication into hospitals		
Keywords	Electromagnetic environment, EMC(Electromagnetic compatibility), EMI(Electromagnetic interference), Wireless communication		

Research Outline

"Medical electromagnetic environment" can be said that the environment of operating medical/welfare/healthcare equipment in hospitals, welfare, and healthcare facilities, including home environment. The elements of medical electromagnetic environment are; radiated electromagnetic fields, static magnetic fields, serge, and electric power supply and groundings. By controlling them correctly, correct medical treatment can be performed. In this research, the object which should be controlled, the status which should be realized, and control techniques are studied about each of these elements.

On the other hand, introduction of wireless communications (wireless speech/data communication) makes labor efficiency extremely higher, while enabling quick and exact information sharing in medicine, for example. However, it cannot be realized by just only introducing them. Wireless communications should be suitably introduced after considering above-mentioned notes, with managing security. In this research, while exploring the procedure and notes of introduction, with illustrating concrete systems.

Specific Features

This research is specialized in a field of medicine, welfare, and healthcare. However, when considering the future shortage of workers accompanying decrease in the birthrate and a demand rise accompanying the progress of population aging, the role of this research is large, especially in Japan.

As for medical electromagnetic environment, it is required to study matters, such as electromagnetic-field irradiation test to the equipment, environmental measurement and radiation source presumption, and decision of solution, by practice. Required background is to know the present condition of hospitals.

As for introducing wireless communications, the wireless LAN accessible area should be considered for the place where the various instruments and various kinds of staff in hospitals, for example. The result of this research can be applied in other fields immediately. The wireless LAN introduction to a hospital is already progressing. Various wireless LAN standards exist already. The introduction and arrangement require consideration of the characteristics. Therefore, it is necessary to get to know about the characteristics of wireless LAN, the characteristics of electromagnetic waves, and the characteristics of hospitals, respectively as a background.