the cases receiving chemotherapy alone and those receiving chemoimmunotherapy, though the response rate was slightly higher in cases treated with the regimen of 5-FU+CHRM+OK-432 than in those treated with the regimen of 5-FU+CHRM. Mean duration of response was 16.0 weeks in the cases treated with FT-207 alone, 15.7 weeks with the regimen of FT-207+OK-432, 11.0 weeks with the regimen of 5-FU+CHRM, 24.0 weeks with the regimen of 5-FU+CHRM+OK-432, 7.5 weeks with the regimen of 5-FU+ADR, and 11.2 weeks with the regimen of 5-FU+ADR+LMS, respectively. Therefore, it seems that longer duration of response was obtained by using chemoimmunotherapy than by using chemotherapy alone.

It was demonstrated also that performance status had a significant effect on objective response. Response was found in 19 of 69 cases (28%) with performance status of more than 40% (Karnofsky's scale). On the contrary, cases with performance status of less than 40% had a reduced response rate (7%, 2/28).

Furthermore, general immune status of the patients was examined sequentially on the basis of various immunological parameters including the skin reactivities to PHA and PPD, T and B cell counts in peripheral blood, and the in vitro lymphocyte reactivities to PHA and PWM. Irrespective of chemoimmunotherapy or chemotherapy alone, there was a tendency to improve the immune status of the responders to the therapy. Chemoimmunotherapy seems to prevent an impairment of immune status in the non-responders to the therapy.

(6) Prospect of Tumor Immunotherapy

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Tumor immunotherapy is defined as a following therapeutic modality of tumor.
1) Anti-tumor activities should be observed in syngeneic or autochthonous tumors of experimental animals.
2) As to the mechanism of anti-tumor activities, immunological mechanism should be presented.
3) Statistically significant survival improvement should be observed in patients treated by tumor immunotherapy.

BCG is being widely used for immunotherapy of human malignant diseases. However, various kinds of serious side effects have been reported by many investigators.

We have shown cell wall skeleton (CWS) of BCG having a principal structure of mycolic acid-arabinogalactan-mucopentide is an immunologically active component of BCG without showing serious side effects. We have demonstrated antitumor activities on syngeneic transplantable tumor of guinea pigs and mice. Chemical carcinogenesis of lung cancer of rabbits and mice was also prevented remarkably by the administration of BCG-CWS.

It was evidenced that these antitumor activities took place on the basis of enhancement of cell-mediated cytotoxicity by BCG-CWS.

455 lung cancer patients were treated
with BCG-CWS. Control patients were 380 in number and both group were treated by conventional therapy, such as surgery, radiotherapy and chemotherapy.

Statistically significant differences of survival between control and CWS treated group were observed.

These results lead us to believe that BCG-CWS therapy is a therapeutic modality in favourably modifying the prognosis of patients with lung cancer.

The next step is to find out new more active immunotherapeutic agents of cancer. The one is CWS of Nocardia, which is more active and less toxic than BCG-CWS. Nocardia is more easily cultivated within a few days than BCG.

The other is active immunopotentiating substance of synthetic subunit of CWS. 6-0-Mycoloyl-N-acetylmuramyl-L-alanyl-D-isoglutamine was obtained as a synthetic compound having enhancing activities of cell-mediated cytotoxicity to tumor cells and antitumor activity to syngenic transplantable tumors.

Tumor immunotherapy is expected to develop on the basis of progress of basic immunology in the future.