Differentiation between osteomyelitis and malignant tumor infiltration into the mandibular bone using [^{18}F]FDG PET

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Abstract

Introduction

When clinical findings similar to osteomyelitis are noted in the course observation after oral cancer treatment, it is difficult to differentiate between the recurrence of the cancer or osteomyelitis caused by radiation.

Objectives

This study was performed to evaluate the usefulness of PET using ^{18}F-FDG for such differentiation.

Materials and Methods

The subjects were 4 patients who had been diagnosed with carcinoma of the tongue or gingiva and received treatment. In the postoperative course observation, ^{18}F-FDG PET was performed to differentiate between osteomyelitis and the recurrence of cancer. Twenty cases of carcinoma of the gingiva with jaw bone infiltration were selected as the control.

Results

The mean SUV was 5.6 ± 1.2 in osteomyelitis, and 11.2 ± 5.7 in gingival carcinoma. No significant difference in the mean was noted between the two groups, although clear differentiation was impossible. However, in cases in which SUV is over 7, it is estimated that the possibility of cancer is markedly high.

Conclusions and discussion

1) Although the mean SUV_{max} was higher in bone infiltration by malignant tumors than in osteomyelitis, no significant difference was noted. However, in cases in which SUV is over 7, it is estimated that the possibility of malignant tumors is markedly high.

2) From these findings, it is considered that ^{18}F-FDG accumulates not only in cancer cells and inflammation-activated macrophages and lymphocytes, but also in bone metabolism-related osteoclasts and osteoblasts.