氏　　名	ABDULLAH　MUHAMMAD　AHMAD　KHASAWNEH
授与した学位	博　士
専攻分野の名称	歯　学
学位授与番号	博甲第６３７０号
学位授与の日付	令和３年３月２５日
学位授与の要件	医歯薬学総合研究科病態制御科学専攻 （学位規則第４条第１項該当）
学位論文の題目	Incidental findings in the thyroid gland on computed tomography images of the oral and maxillofacial region (頭頸部 CT 撮影における甲状腺偶発的所見の検討)
論文審査委員	沢　禎彦　教授　　浅海　淳一　教授　　中野　敬介　准教授

学位論文内容の要旨

In recent years, there has been increased use of computed tomography (CT) in dental settings, and CT machines have seen a wide spread in many facilities. This availability, along of advancement in imaging technology, has led to an ease of acquisition of large amounts of diagnostic information from CT scans.

The advancement achieved in imaging modalities such as CT presents some challenges. For instance, the area exposed in an image might exceed the region of interest and show organs and structures adjacent to it. This burdens the radiologist with the responsibility of examining a larger region than initially intended, with the possibility of discovering incidental findings—findings discovered on a radiograph taken for another purpose. The frequency of discovering incidental findings is increasing, and so is the importance of such findings.

Oral radiologists should examine all organs and structures captured in a maxillofacial CT scan. This helps improve the chances of early detection and treatment of lesions with potential malignancy. Unfortunately, many radiologists fail to detect and report such findings. Also, doctors might address such findings in radiology reports. This has created a social problem for both kinds of practitioners, with potential medical and legal consequences.

Oral and maxillofacial CT scans occasionally show the thyroid gland. In such images, incidental thyroid nodules (ITNs) may be discovered. This study aimed to examine the prevalence and characteristics of incidental findings of the thyroid gland in CT images of the oral and maxillofacial region.

CT scans for patients taken between January 2012 and December 2016, obtained with varying CT machines and imaging parameters, were retrospectively examined. Images with ITNs and other incidental findings (changes of size, calcification) were recorded along with the characteristics of the findings. The frequency of describing these findings in the patients' radiographic interpretation reports was also recorded. The findings were classified based on the guidelines of the Japan Association of Breast and Thyroid Sonology (JABTS).

A total of 1,135 patients were examined. Of those, 326 (28.7%) had incidental findings. Among those with

findings, 169 (14.9%) had nodules larger than 5 mm in diameter, the threshold set by the JABTS guidelines for further examination, such as fine-needle aspiration cytology (FNAC). Of the 169 nodules exceeding 5 mm in diameter, only 52 (30.8%) were described in the patients' radiographic interpretation reports, of which 9 (17.3%) were referred to endocrinology for further examination.

Not all patients with incidental thyroid nodules underwent FNAC. Thus, there may have been more patients with incidental thyroid nodules suggestive of malignancy or even with malignancy. Diagnosis of thyroid gland disease on CT images is insufficient and limited compared with US examination, but CT could be an effective evaluation method for thyroid gland screening and assistance in US examination.

Incidental findings in the thyroid gland are quite common in CT scans of the oral and maxillofacial region. Oral radiologists should make a habit of examining all regions of a scan and reporting any findings they encounter, even outside the region of interest. Promoting awareness is also needed for doctors to carefully check radiographic interpretation reports and take proper action when the need arises.

論文審査結果の要旨

Introduction:The numbers of abnormal findings incidentally detected in adjacent regions are increasing with advances in imaging modalities. The present study aimed to examine the prevalence and characteristics of incidental findings in the thyroid gland on computed tomography (CT) images of the oral and maxillofacial region.

Materials and Methods:CT scans of the oral and maxillofacial region in patients obtained between January 2012 and December 2016 were retrospectively reviewed. Images that revealed incidental findings in the thyroid gland, including nodules, were recorded, together with the sizes and characteristics of the findings. The Japan Association of Breast and Thyroid Sonology (JABTS) guidelines were used for classification.

Results:The rate of descriptions of these findings in the radiographic interpretation reports were also examined. Of the 1,135 patients examined, 326 (28.7%) had several types of incidental findings. In particular, 169 (14.9%) of the 1,135 patients had nodules >5 mm in diameter, for which further careful examination is recommended in the JABTS guideline. The description rate for nodules >5 mm in diameter in the radiographic interpretation reports was 30.8% (52/169 patients), of whom 17.3% (9/52 patients) were referred to the endocrinology department for further careful examination.

Conclusion:Incidental findings in the thyroid gland were relatively common on CT images of the oral and maxillofacial region. Oral radiologists tend to focus specifically on the oral and maxillofacial region during diagnosis on oral and maxillofacial CT images, but should pay the same careful attention to observe adjacent regions, such as the thyroid gland.

This research paper has been peer-reviewed and subsequently published in Oncology Letters 19(3): 2005-2010.

These findings are significant. They provide useful knowledge that will promote the advance in the radiology field. Therefore, the dissertation examining committee acknowledged the value of this thesis as a doctoral dissertation.