OBJECTIVE: The palatine tonsil contains innate immune cells, such as natural killer (NK) cells and macrophages, which may be involved in locally limited tonsillar cancers. This study was performed to clarify the possibility that the infiltration of innate immune cells might inhibit the growth of primary tumors, leading to cervical metastases. The density of NK cells and macrophages were also measured to identify the innate and adaptive immune system. Among the various immune effector cells, natural killer (NK) cells and macrophages were thought to have the potential to protect against the development of cancer.

METHODS: NK cells and macrophages were immunohistochemically identified by using anti-CD57 Ab (clone HNK-1, 1:50, Becton & Dickinson) and anti-CD68 antibodies (clone KP1, 1:50, Dako). In addition, we immunohistochemically identified cytokeratin Ab (AE1/AE3, 1:100, Dako) and DAB reaction system Envision+ (Dako) to evaluate the possibility that the growth of primary tumors might be inhibited by these innate immune cells in tonsillar cancers.

RESULTS: Several multi-nucleated giant cells (black arrows) were observed in the stromal area surrounding the cancer cell nest in the tonsillar cancers (Figure 1). The density of NK cells was significantly higher in the paracortex of the normal tonsils than in the tonsillar cancers (Table 1, p<0.0001). The number of macrophages was also significantly increased in tonsillar cancers (a median of 247) in comparison to tongue cancers (a median of 81) and normal tonsils (a median of 35) (p<0.0001). The number of NK cells in locally limited tonsillar cancers (a median of 100 in eight patients) in comparison to locally early tongue cancers (a median of eight in 15 patients) and normal tonsils (a median of 35 in five patients; p<0.0001). The number of macrophages in tonsillar cancers was significantly higher than that in tongue cancers (247 vs 81) (p<0.0001) (Table 2). The density of macrophages in tonsillar cancers was significantly higher than that in normal tongues (150 vs 81) (p<0.0001) (Figure 2). The density of macrophages in tonsillar cancers was significantly higher than that in tongue cancers (150 vs 81) (p<0.0001) (Table 2). The number of macrophages in locally limited tonsillar cancers was significantly higher than that in normal tonsils (100 vs 35) (p<0.0001) (Figure 2). The number of macrophages in locally limited tonsillar cancers was significantly higher than that in normal tonsils (100 vs 35) (p<0.0001) (Table 2).

CONCLUSIONS: The infiltration of innate immune cells, such as NK cells and macrophages, was observed significantly more frequently in tonsillar cancers than in tongue cancers (p<0.01). Macrophages were observed to be significantly increased, and might therefore inhibit the growth of the primary tumor in locally limited tonsillar cancer. In addition, these inhibitory immune cells against the primary tumor in the palatine tonsil might be part of the etiology of the development of primary-unknown cervical metastasis.