



	Everolimus	8%-14%	3.8%
--	------------	--------	------

**Table 1:** Reported frequency, and mortality rate of targeted therapy-induced interstitial lung disease; ALK: Anaplastic lymphoma kinase; EGFR: epidermal growth factor receptor; HER: human epidermal growth factor receptor; mTOR: mammalian target of rapamycin; NA: not available; TKI: tyrosine kinase inhibitor

Trastuzumab is a monoclonal antibody binding to the extracellular domain of the HER2 protein for the treatment of breast cancer. The incidence of trastuzumab-induced interstitial pneumonitis, organizing pneumonia, and acute respiratory distress syndrome (ARDS) was less than one percent in the previous reports [27-30].

Rituximab is an anti-CD20 monoclonal antibody for the treatment of non-Hodgkin lymphoma, and rheumatoid arthritis. The frequency of ILD had been reported in 9 of 107 lymphoma patients (8%) receiving rituximab and one patient with ILD died of secondary infection [31].

The mTOR inhibitors include temsirolimus and everolimus. Temsirolimus was used for the treatment of advanced RCC. Temsirolimus-associated ILD had been reported in 0.5 to 5 % of cancer patients in several studies, and the fatalities were rare [32-36]. Everolimus was used for the treatment of advanced RCC, and PNET. The frequencies of ILD related to everolimus ranged from 8 to 14% of treated patients [36-42]. The mortality rate due to ILD was reported to be 3.8% (4 of 105 patients) in a previous study [4].

Patients with drug-induced ILD (DILD) usually present with non-specific symptoms and signs, and no specific laboratory test, radiographic features, or pathologic findings are available to establish the diagnosis. Therefore, DILD usually remains a diagnosis of exclusion. The diagnostic criteria has been suggested as follows [4,43-45] : (1) A drug exposure history; (2) clinical, radiographic, and histopathological characteristics which are compatible with previous findings of the the identical drug (3) other pulmonary diseases should be excluded; (4) improvement after cessation of the suspected drug and (5) Recurrence of ILD after rechallenge.

Exclusion of other pulmonary disease is very important, and the differential diagnosis includes pulmonary infection, cardiogenic or non-cardiogenic pulmonary edema, pulmonary metastasis, lymphangitic carcinomatosis, pulmonary embolism, radiation-

cell lung cancer: a review on current insight. *Cancer Chemother Pharmacol* 68: 1099-1109

- 4 Saito Y, Gemma A (2012) Current status of DILD in molecular targeted therapies. *Int J Clin Oncol* 17: 534-541.
- 5 Chen YM (2013) Update of epidermal growth factor receptor-tyrosine

41. Soria JC, Shepherd FA, Douillard JY, Wolf J, Giaccone G, et al. (2009) Efficacy of everolimus (RAD001) in patients with advanced NSCLC previously treated with chemotherapy alone or with chemotherapy and EGFR inhibitors. *Ann Oncol* 20: 1674-1681.
42. Mizuno R, Asano K, Mikami S, Nagata H, Kaneko G, et al. (2012) Patterns of interstitial lung disease during everolimus treatment in patients with metastatic renal cell carcinoma. *Jpn J Clin Oncol* 42: 442-446
43. Camus P (2003) *Interstitial lung disease: Drug induced infiltrative lung diseases*. (4th edn), B.C. Decker, Hamilton, Ontario, Canada
- 44.