Association of Plasma CXCL12 Level and Bone Metastasis in Advance Stage Non-small Cell Lung Cancer Patients in King Chulalongkorn Memorial Hospital

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Abstract

Background: Bone is the one common metastasis site in advance stage non small cell lung cancer metastasis and a half of them occurred skeleton related event. 2 years overall survival was 11.3%. Although the sensitivity of bone scan is quite high, its specificity is not satisfactory due to false positive or false negative in osteolyticlesion. CXCL12/CXCR4 axis is the one role of various cancer metastasis included NSCLC and bone metastasis in prostate cancer. In the past, there were studies showed that higher plasma CXCL12 in NSCLC patients versus normal population, higher CXCL12 in malignant pleural effusion versus non malignant pleural effusion.

Method: In this study, cross-sectional analytic study, we enrolled patients with advance stage NSCLC in KCMH during May 2013–January 2014. We collected blood was taken place before systemic treatment to compare plasma CXCL12 level in patients who had bone metastasis versus no bone metastasis for primary endpoint. Secondary endpoint was evaluating correlation plasma CXCL12 with other organ metastasis.

Results: Total eligible patients was 89, 41 patients were NSCLC with bone metastasis, 48 patients were NSCLC without bone metastasis. Mean plasma CXCL12 in bone metastasis patients was 2284.49±475.40 pg/ml, no bone metastasis was 2062.93±717.93 pg/ml and local bone invasion was 2995.75±358.85 pg/ml (p=0.048). Plasma CXCL12 was highest in organ metastasis 3 organ 2349.34±529.35 pg/ml, 2 organ metastasis 2197.16±617.38 pg/ml and 0-1 organ metastasis was lowest plasma CXCL12 2125.57±699.19 pg/ml. Patient who had bone metastasis only had plasma CXCL12 2401.95±475.60 pg/ml, combined metastasis 2292.49±501.76 pg/ml, metastasis NSCLC but no bone metastasis 1893.91±75688.79 pg/ml (P=0.012).

Conclusion: The result showed high plasma CXCL12 in NSCLC patient who had bone metastasis and multiple organ metastases. Subgroup analysis who had merely bone metastasis was highest CXCL12 level and combined metastasis higher CXCL12 than who had non bone metastasis. In conclusion, Our results demonstrate a correlation between plasma CXCL12 and bone metastasis in NSCLC patients. Plasma CXCL12 is may be an important cytokine for cancer metastasis.