J Hum Genet (2008) 53:377–378
DOI 10.1007/s10038-008-0270-6

LETTER TO THE EDITOR

Association of chemokine CCL5 and systemic malignancies

Shailendra Kapoor

Received: 28 January 2008 / Accepted: 8 February 2008 / Published online: 27 March 2008

To the Editor

The article by Konta et al. (2008) on the relationship between CC chemokine ligand 5 (CCL5) genotype and urinary albumin excretion in the nondiabetic Japanese general population is highly interesting. The study by Konta et al. adds to the growing array of pathological conditions in which CCL5 plays a major role. Interestingly, CCL5 has recently been implicated in the etiopathogenesis of a number of systemic malignancies.

For instance, Luboshits et al. (1999), in a recent study, have shown that advanced breast cancers are associated with increased expression of CCL5. CCL5 has also been shown to be a significant predictor of progression in patients with stage II breast cancer (Hahoshen et al. 2006). In another study, tumors that expressed higher levels of CCL5 were more likely to metastasize in comparison with tumors that did not express as much CCL5 (Stormes et al. 2005). Vaday et al. (2006), in another recent study, have shown that CCL5 increases the proliferation and growth of prostate cancer cells. It is also believed that altered expression of CCL5 by T lymphocytes infected with human T-cell leukemia viruses may play a role in the pathogenesis of adult T-cell leukemia (Mori et al. 2004). Similarly, overexpression of CCL5 has been demonstrated in tumors such as mantle-cell lymphomas (Ek et al. 2006). Aldinucci et al. (2008), in a recent study, demonstrated inhibition of proliferation of Hodgkin's lymphoma cell lines with the use of anti-CCL5 monoclonal antibodies, clearly confirming the role of CCL5 in the pathogenesis of these tumors.

CCL5 levels are also increased in a wide spectrum of other diseases, such as idiopathic inflammatory myopathies (Civatte et al. 2005) and chronic gastritis (Ohtani et al. 2004). The recent study by Konta et al. further adds to diseases in which CCL5 plays a major pathogenetic role. Further studies are needed to identify potent and safe inhibitors of CCL5 for better management of these diseases ranging from breast cancer to nondiabetic albuminuria.

S. Kapoor (✉)
University of Illinois at Chicago, Chicago, IL 60612, USA
e-mail: shailendrakapoor@yahoo.com

References

Aldinucci D, Lorenzon D, Cattaruzza L, Pinto A, Gloghini A, Carbone A, Colombatti A (2008) Expression of CCR5 receptors on Reed-Sternberg cells and Hodgkin lymphoma cell lines: involvement of CCL5/Rantes in tumor cell growth and microenvironmental interactions. Int J Cancer 122(4):769–776

Civatte M, Bartoli C, Schleinitz N, Chetaille B, Pellissier JF, Figarella-Branger D (2005) Expression of the beta chemokines CCL3, CCL4, CCL5 and their receptors in idiopathic inflammatory myopathies. Neuropathol Appl Neurobiol 31(1):70–79

Ek S, Bjorck E, Hogerkorp CM, Nordenskjold M, Porwit-MacDonald A, Borrebaeck CA (2006) Mantle cell lymphomas acquire increased expression of CCL4, CCL5 and 4-1BB-L implicated in cell survival. Int J Cancer 118(8):2092–2097

Konta T, Emi M, Toriyama S, Ariumi H, Ishii M, Takasaki S, Ikeda A, Ichikawa K, Shibata Y, Takabatake N, Takeishi Y, Kato T, Kawata S, Kubota I (2008) Association of CC chemokine ligand 5 genotype with urinary albumin excretion in the non-diabetic Japanese general population: the Takahata study. J Hum Genet 53(3):267–274

Luboshits G, Shina S, Kaplan O, Engelberg S, Nass D, Lifshitz-Mercer B, Chaitchik S, Keydar I, Ben-Baruch A (1999) Elevated expression of the CC chemokine regulated on activation, normal T cell expressed and secreted (RANTES) in advanced breast carcinoma. Cancer Res 59(18):4681–4687

Mori N, Krensky AM, Ohshima K, Tomita M, Matsuda T, Ohta T, Yamada Y, Tomonaga M, Ikeda S, Yamamoto N (2004) Elevated expression of CCL5/RANTES in adult T-cell leukemia cells: possible transactivation of the CCL5 gene by human T-cell leukemia virus type I tax. Int J Cancer 111(4):548–557

Ohtani N, Ohtani H, Nakayama T, Naganuma H, Sato E, Imai T, Nagura H, Yoshie O (2004) Infiltration of CD8+ T cells containing RANTES/CCL5+ cytoplasmic granules in actively inflammatory lesions of human chronic gastritis. Lab Invest 84(3):368–375

Stormes KA, Lemken CA, Lepre JV, Marinucci MN, Kurt RA (2005) Inhibition of metastasis by inhibition of tumor-derived CCL5. Breast Cancer Res Treat 89(2):209–212

Vaday GG, Peehl DM, Kadam PA, Lawrence DM (2006) Expression of CCL5 (RANTES) and CCR5 in prostate cancer. Prostate 66(2):124–134

Yaal-Hahoshen N, Shina S, Leider-Trejo L, Barnea I, Shabtai EL, Azenshtein E, Greenberg I, Keydar I, Ben-Baruch A (2006) The chemokine CCL5 as a potential prognostic factor predicting disease progression in stage II breast cancer patients. Clin Can Res 12(8):4474–4480