

Foodborne Eosinophilia due to Visceral Larva Migrans: A Disease Abandoned

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Eosinophilia is defined as eosinophils of more than 500/ μ L in the peripheral blood, and it may occur in a number of diseases or disease states including allergies, parasitic infections, vasculitides, connective tissue diseases, as a non-specific reaction to solid tumors and clonal eosinophilic disorders.

The prevalence and the causes of eosinophilia are varied depending upon regions. In Canada, the incidence was 0.1% (225/195,300) in a cohort of ambulatory outpatients, and the vast majority of eosinophilia was related with allergic disease (1). In Korea, on the other hand, it appears that eosinophilia is a common condition in patients as well as in healthy-looking people. Statistics from a general hospital revealed that 4.0% (627/15,674) of patients had eosinophilia (Kim HJ, *Eosinophilia statistics, Aug. 15-20, 2011. Samsung Medical Center, Seoul, Korea*). In a study, 12.2% (5019/41,137) of patients who had been admitted or had visited had peripheral eosinophilia (2). This large difference in the prevalence of eosinophilia is believed to have originated from the difference in the prevalence of the primary disease causing eosinophilia. A number of tissue invading parasitic diseases such as roundworms (nematodes), tapeworms (cestodes) and flukes (trematodes), visceral larva migrans, schistosomiasis, filariasis, and ascariasis are the common causes of eosinophilia. In Korea, visceral larva migrans has been the most common cause of peripheral eosinophilia, accounting for 67%-87% (3, 4).

Human infection of *Toxocara canis*, i.e. visceral larva migrans takes place in two ways - by ingesting eggs in soil or alternatively by eating uncooked animal liver containing encapsulated larvae. Some people like to eat cow liver uncooked on the basis that they believe raw cow liver is a "health-promoting food" or "food for eyesight." In patients with visceral larva migrans, questionnaire revealed that a history of ingestion of raw cow liver was positive in 60%-90% (3, 4). In fact, in a survey conducted in a rural area in Korea demonstrated a seropositive rate for *T. canis* of 5% (5).

Patients with eosinophilia due to visceral larva migrans may present with eosinophilic inflammatory lesions in the liver and/or lungs. The image findings of eosinophilic inflammatory lesions were mainly reported by Korean investigators but majority of

investigations have not identified the cause of eosinophilia because serological test for *T. canis* was not performed. In some Korean studies in which serological test for *T. canis* was performed, the majority of eosinophilic infiltration in the liver and lungs were patients with visceral larva migrans of *T. canis* (3, 4). Therefore, the major cause of eosinophilia with hepatic or pulmonary eosinophilic infiltration in Korea is believed to be due to visceral larva migrans, i.e., *T. canis* infection.

When a physician is not aware of visceral larva migrans and a radiologist is not familiar with image findings of eosinophilic inflammatory lesions, patients undergo expensive diagnostic tests such as CT, MR imaging or positron emission tomography. Nevertheless, those imaging tools are nonspecific and biopsy, bone marrow examination or surgery is often necessary to confirm histology. Even when histologic diagnosis reveals an eosinophilic inflammatory lesion, the cause of the inflammation is still obscure. These diagnostic procedures cost a lot to patients economically and physically but diagnosis still remains obscure. A serologic test is necessary for the correct diagnosis of visceral larva migrans.

Nevertheless, in clinical practice, many clinicians do not include a serologic test for visceral larva migrans because of their lack of awareness of the high prevalence of visceral larva migrans. Many clinicians in outpatient clinics do not investigate mild eosinophilia further, or they attribute it to other diseases as a cause of eosinophilia (3). When eosinophilia is severe and persistent without an identifiable cause, some clinicians sometimes diagnose idiopathic hypereosinophilic syndrome and other clinicians may diagnose clonal eosinophilia and thus, the patients might be treated with antileukemic therapy. Some physicians prescribe corticosteroid hormone and the others prescribe anticancer chemotherapy.

Millions of Korean people have some degree of eosinophilia at various times throughout their lives because they like to eat raw cow liver. Thus, they are infected by *Toxocara* larvae and become patients of visceral larva migrans. The vast majority of physicians pay no attention to mild eosinophilia. Further, those patients with persistent eosinophilia undergo unnecessary ex-

pensive diagnostic tests, surgery, or anticancer chemotherapy. Lack of knowledge and negligence leave many patients with eosinophilia from visceral larva migrans abandoned.

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