

Maculopathy in Dengue Fever

To the Editor: A recent article by Chlebicki et al (1) described 4 patients hospitalized for dengue fever who were found to have retinal hemorrhages. These patients reported reduced visual acuity and metamorphopsia, i.e., distorted visual images attributable to intrinsic retinal disease involving the macula; macular hemorrhages and exudates were found on retinal examination. The authors concluded that the retinal hemorrhages were responsible for the patients' visual symptoms.

This conclusion is misleading because retinal hemorrhages alone cause scotomas. Rather, the accumulation of subretinal fluid in the macula results in metamorphopsia and blurring of vision. In previous reports of patients in whom macular changes developed from dengue fever, some were found to have macular hemorrhages (2–4). In addition, clinical examination and investigation of these patients showed vasculopathic changes in the macular region that affected the retinal and choroidal blood vessels (5), although the tissues of the periphery tended to be spared. A fluorescein angiograph of the retina showed knobby hyperfluorescence of the retinal arterioles with minimal leakage, as well as some spots of leakage at the level of the retinal pigment epithelium. An indocyanine green angiograph showed diffuse hyperfluorescence of the choroid. These pathologic changes in the macula were the most likely cause of the blurring of vision in such patients, which has been the case in our experience.

The article by Chlebicki et al. did not state whether these procedures had been performed on their patients to confirm or exclude retinal or choroidal vasculopathy in the macula. Therefore, these authors would have had difficulty concluding that retinal hemorrhages caused blurring of

vision and metamorphopsia in patients with dengue maculopathy.

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References

- Chlebicki MP, Ang B, Barkham T, Laude A. Retinal hemorrhages in 4 patients with dengue fever. *Emerg Infect Dis.* 2005;11:770–2.
- Wen KH, Sheu MM, Chung CB, Wang HZ, Chen CW. The ocular fundus findings in dengue fever [article in Chinese]. *Gaoxiong Yi Xue Ke Xue Za Zhi.* 1989;5:24–30.
- Haritoglou C, Scholz F, Bialasiewicz A, Klauss V. Ocular manifestations in dengue fever [article in German]. *Ophthalmologie.* 2000;97:433–6.
- Haritoglou C, Dotse SD, Rudolph G, Stephan CM, Thurau SR, Klauss V. A tourist with dengue fever and visual loss. *Lancet.* 2002;360:1070.
- Lim WK, Mathur R, Koh A, Yeoh R, Chee SP. Ocular manifestations of dengue fever. *Ophthalmology.* 2004;111:2057–64.

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Pulmonary Tuberculosis and SARS, China

To the Editor: As part of a cohort study of 83 patients with severe acute respiratory syndrome (SARS) in Beijing, China, we conducted a follow-up study of all the patients by routine medical examination. During the process, 3 patients with chest radiographs consistent with active disease were identified as having pulmonary tuberculosis (TB). Here we describe

the 1-year clinical outcome and immune response in these patients.

Demographic details and coexisting conditions are shown in the Table. Patient 1 was a healthcare worker who became infected with SARS-associated coronavirus (CoV) while on duty with SARS patients. After he was transferred to a hospital dedicated to SARS management, pulmonary TB was diagnosed (positive acid-fast bacilli smear on sputum samples). Patients 2 and 3 were known to have cases of pulmonary TB and became infected with SARS-CoV after contact with other patients hospitalized for SARS. These 2 patients were sputum smear-negative for acid-fast bacilli, and diagnosis was made on the basis of previous exposure to TB, relevant symptoms of typical pulmonary TB, chest radiographs consistent with active disease, a positive tuberculin skin test result, and the finding of cavity regression on chest radiographs after anti-TB treatment was initiated. No cultures were obtained for isolation and comparison of *Mycobacterium tuberculosis* strains (1). All 3 patients had confirmed SARS based on amplification of SARS-CoV RNA by reverse transcriptase-polymerase chain reaction (RT-PCR) from sputum and stool specimens (2). Patients 2 and 3 recovered without complications; patient 1 had the most severe disease and required mechanical ventilation in an intensive care unit before recovering.

Both cellular and humoral immunity were evaluated during the follow-up of these patients. T-lymphocyte subsets were measured 6 months after disease onset by flow cytometry using fluorescein isothiocyanate-labeled specific monoclonal antibodies. Compared to other SARS patients (n = 47), the 3 patients with TB had lower mean CD4+ T cells (368.4/μL vs. 656.6/μL, respectively; p = 0.05) and lower mean CD8+ T cells (371.0/μL vs. 490.1/μL, respectively; p = 0.39). SARS-CoV immunoglobulin