Metastatic Choroidal Abscess Due to *Pseudomonas aeruginosa* in Patients with Cystic Fibrosis

*Pseudomonas aeruginosa* is regularly isolated from the lungs of patients with cystic fibrosis. However, this organism does not usually spread to involve other sites in these patients as it can in other groups of patients [1]. We describe two patients with cystic fibrosis and choroidal abscesses due to *Pseudomonas aeruginosa*: bacteremic spread of the organism from a distant source was presumed to have occurred in both cases.

**Patient 1.** A 22-year-old male with cystic fibrosis had undergone bilateral sequential lung transplantation. His early clinical course was uncomplicated, and his therapeutic regimen included prednisolone, cyclosporine, and azathioprine. Eight months after the procedure, he developed pneumonia. *P. aeruginosa* was isolated from bronchoalveolar lavage fluid, and he received intravenous antibiotics. Over the next 2 months, he had further respiratory infections requiring intravenous antibiotic therapy.

Ten months after transplantation, the patient presented with sudden painless visual loss in his right eye. Examination revealed a visual acuity of 1/60, moderate vitritis, and a large, solitary subretinal mass (figure 1). A diagnostic vitreous tap was performed, and *P. aeruginosa* was isolated from the specimen. Intravitreal and intravenous antibiotics were administered. The abscess continued to enlarge, and external transscleral drainage of the choroidal abscess was performed on two occasions. Despite these measures, the abscess enlarged again, causing scleral pain, proptosis, and progressive retinal detachment; therefore, the eye was enucleated.

Several sources of the metastatic choroidal infection were identified. Collapse and consolidation of the right-upper lung lobe were detected, and the lobe was resected. Mediastinal abscesses were identified and drained twice. A transoesophageal echocardiogram, which was obtained following a cerebrovascular event, showed a left atrial thrombus that was surgically resected. This thrombus, which may have arisen from the mediastinal abscesses and spread contiguously along a suture line, yielded *P. aeruginosa*.

The patient required hospitalization for 90 days, and during this period, he received multiple antibiotics. He recovered well, with no discernible neurological deficits; a blood-gas analysis showed that the arterial oxygen saturation was 97% while he was breathing room air. After discharge, he returned to his employment.

Three months later the patient presented with pneumonia and sepsis, and a large splenic abscess was detected. Despite aggressive treatment, he died of sepsis, diffuse intravascular coagulopathy, and hemorrhage.

**Patient 2.** A 23-year-old man with cystic fibrosis had undergone bilateral sequential lung transplantation. He presented with right eye pain and blurred vision. He had had occasional fevers and a minimal increase in sputum production. Physical examination revealed a visual acuity of 6/36 with moderate anterior uveitis, vitritis, and a well-defined, solitary, pale, elevated choroidal lesion. Bilateral inspiratory crackles were heard on auscultation.

The abscess was drained, and intravitreal and intravenous antibiotics were administered. *P. aeruginosa* was isolated from the abscess. After initial regression, the abscess reaccumulated and was again drained, resulting in some improvement in the patient’s vision.

He remained systemically well for 4 weeks and then developed persistently high fevers; his diabetes worsened. His respiratory function was stable. Despite numerous investigations, no extrapulmonary site of sepsis was found, and all blood cultures were negative. He subsequently developed massive hemoptysis and hypoxemic respiratory failure and died. Postmortem examination confirmed changes consistent with severe cystic fibrosis of the lungs. No other sites of infection were identified.

Metastatic endophthalmitis is a severe sight-threatening condition [2]; visual acuity is preserved in only ~40% of patients. Endophthalmitis has been increasingly described in immunocompromised patients (e.g., those who have undergone transplantation) [3]. Metastatic choroidal infections are a rare subset of endophthalmitis; however, they are being reported with increasing frequency in immunocompromised patients such as those with AIDS [4]. Our two patients had unusual bacterial choroidal infections.

*Pseudomonas* septicemia has been well described among patients who were immunocompromised (e.g., as a result of burns or malignancy) [1]. One case of *pseudomonas* septicemia, which was detected during life, has been described in an otherwise immunocompetent person with cystic fibrosis [5]. Pseudomonal septicemia has also been described in lung transplant recipients with cystic fibrosis [6].

Treatment with intravenous antibiotics is essential for patients with metastatic choroidal abscesses, although penetration of the drugs into the eye is often poor and may be inadequate. However, animal studies have shown that there is increased penetration when endophthalmitis is present because of pathological disruption of

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eye tissues [7]. Intravitreal instillation of antibiotics and drainage of the abscess are usually recommended, but neither procedure is without risk. Regular ophthalmologic examinations are required to determine optimal management; the severity of underlying conditions, such as cystic fibrosis, and the risks of general anesthesia in these patients must be kept in mind [8].

Endophthalmitis due to *P. aeruginosa* is a rare complication of cystic fibrosis, but it should be considered for patients with cystic fibrosis who present with visual impairment or eye pain. Careful investigation and aggressive medical and surgical intervention are required if a successful outcome is to be achieved.

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**Idiopathic CD4+ T Lymphocytopenia Presenting as Progressive Multifocal Leukoencephalopathy: Case Report**

Idiopathic CD4+ T lymphocytopenia is a recently described syndrome characterized by significant depression in the number of circulating CD4+ T lymphocytes in the absence of any identifiable causes of immunologic abnormalities. In some cases, this syndrome has been associated with the development of opportunistic infections, indicative of cell-mediated immune deficiency. We describe a patient with progressive multifocal leukoencephalopathy (PML) as the initial manifestation of idiopathic CD4+ T lymphocytopenia.

A 47-year-old man was admitted to a community hospital with a 4-day history of confusion and speech difficulty. Four years before admission, he had an uncomplicated myocardial infarction that was not associated with Q-wave changes. He had not had any subsequent cardiac symptoms and worked full time doing light field work for a utility company. He was not taking any medications and denied other medical problems. He did not have any risk factors for HIV infection or a family history of congenital immunodeficiencies.

On admission he was noted to be disheveled. His vital signs were blood pressure, 110/70 mm Hg; temperature, 97.5°F; pulse, 84/min; and respirations, 16/min. Findings of a general physical examination were unremarkable. The patient could follow simple directions and state his age but was disoriented to place and date. His speech was slow and dysphasic, and he had difficulty naming common objects. Findings on examination of the optic fundi, cranial nerves, cerebellar function, and reflex and sensory functions were normal. A CT brain scan revealed a large area of low attenuation without mass effect or abnormal enhancement in the subcortical white matter of the left frontal lobe. An MRI and cerebral angiogram did not reveal any additional diagnostic information.

The patient underwent stereotactic biopsy of the left frontal lobe. The specimen was reviewed at the Neuropathology Division of the Armed Forces Institute of Pathology (Washington, D. C.). In-

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**Figure 1.** Axial T2-weighted MRI of a patient with idiopathic CD4+ T lymphocytopenia. The hyperintensity of the frontoparietal white matter is consistent with the presence of progressive multifocal leukoencephalopathy.