In the Literature

Paranasal Sinus Mycetomas


Nicolai and colleagues in Brescia, Italy, describe their experience with 160 patients with fungus balls of the paranasal sinuses, all of whom underwent endoscopic surgery. The maxillary sinus was involved in 135 patients (84.4%), the sphenoid was involved in 23 (14.4%), and 1 patient had simultaneous sphenoid and ethmoid disease. Although computed tomography detected an area of “metal density” in 71.9% of maxillary cases, this was seen in only 7% of patients with sphenoid involvement; heterogeneous hyperdensity with microcalcifications was seen in 16.3% and 42.9%, respectively, and abnormalities of the osseous sinus wall were seen in 37.8% and 52.4%. Magnet resonance imaging, which was performed for 10 patients with sphenoid mycetoma, demonstrated a lesion of reduced intensity surrounded by a hyperintense T2-weighted image and mucosal enhancement; a central signal void was seen in 5 of the 10. Histological examination of the endoscopically operated specimens revealed fungal elements in each, but fungal growth in culture was detected in only 24 (20.3%) of 118 cases, with Aspergillus fumigatus and Alternaria species being most frequently identified fungi. No disease recurrence was observed after follow-up conducted 18–195 months after surgery. No mention is made of antifungal chemotherapy.

A review of 24 cases of sphenoid fungus balls seen at the Hôpital Lariboisière in Paris, France, over a 10-year period found that symptoms were variably present. Only 62% of patients had headache, and its localization varied widely. Computerized tomography, which was available for review in 12 cases, revealed sphenoid opacity in 11, intracavitary hyperdensity in 10, osteogenesis or sclerosis in 15, and osteolysis in 5. All patients were treated endoscopically. Culture results were not reported (these seem to have not been routinely performed), but branched hyphae were seen on histological examination in each case.

Mycetoma of the paranasal sinuses is infrequently encountered. By definition, it is noninvasive and, as a consequence, systematically administered antifungal therapy may be of little or no value, although there appears to be little data available addressing this issue. Although imaging may provide clues to the diagnosis, diagnosis ultimately depends on demonstration of fungus ball on endoscopic or open surgical exploration, and these procedures are likely to be curative in the absence of invasive disease.

Subversive Antibodies: The Increased Risk of Salmonella Infection in Human Immunodeficiency Virus (HIV)–Infected Patients Is Related to High Serum Concentrations of Ineffective Antibody That Impair the Activity of Bactericidal Antibody


In Africa, non-typhi Salmonella species (NTS) are frequent causes of bacteremic infection in HIV-infected and HIV-uninfected individuals. In a recent study in Lagos, Nigeria, NTS were the most frequent cause of such bacteremia in adults with AIDS [1]. In addition, recurrence of Salmonella bacteremia after usualy effective treatment continues to be a problem in regions of high prevalence of infection due to this organism and was previously a not infrequent problem in the United States before the introduction of effective antiretroviral therapy [2]. The increased susceptibility to such infections in patients with AIDS and the fact that NTS are facultative intracellular pathogens are consistent with the notion that T cell immunity is a critical factor in its immunological control. Defects in macrophage function do not provide a complete explanation either, because macrophages recovered from HIV-infected subjects are able to internalize and kill NTS, although they do exhibit evidence of cytokine dysregulation [3]. Recent evidence indicates that, contrary to previous assumptions, antibody plays a key role in protection against NTS [4, 5].

HIV infection is associated with polyclonal B cell activation and resultant increased serum concentration of immunoglobulins, which is, nonetheless, frequently associated with impaired responses to specific antigens. The latter results in part from defective T cell help, as well as defects in B cell function. MacLennan and colleagues found that, seemingly paradoxically, African adults with AIDS had high serum concentrations of antibody specifically directed against NTS lipopolysaccharide. These high antibody titers, however, were associated with defective killing of NTS, despite the presence of normal complement activity. This high-titer serum interfered with normal killing of NTS by serum obtained from HIV-uninfected subjects. This proved to be the result of interference with the action of antibody directed against outer-membrane proteins, particularly porins, that otherwise were rapidly bactericidal, possibly by impeding access of these lethal antibodies to their target.

These findings are consistent with previous knowledge that B cell function is dysregulated in HIV infection. They also have important implications for vac-
cine development, something desperately needed in places such as sub-Saharan Africa, in that such a product should elicit potent bactericidal antibodies directed at outer-membrane proteins.

References

Asymptomatic Systemic Leishmanial Infection

Colombo and colleagues in Palermo screened 145 HIV-infected adults seen in their clinic during February-May 2008 for evidence of asymptomatic infection due to *Leishmania infantum*. Of these, 133 were asymptomatic, consecutively seen outpatients, whereas the other 12 were inpatients without symptoms suggestive of visceral leishmaniasis. The median CD4+ T cell count was 430 cells/mm³ (range, 7–1264 cells/mm³). The majority (114 pa-

tients) were receiving antiretroviral therapy, and 52 had plasma HIV RNA concentrations <47 copies/mL. One patient had been successfully treated for visceral leishmaniasis 5 years previously but had no clinical evidence of active infection at the time of study.

Immunoglobulin G antibody to *L. infantum* was detected in only 2 patients (1.4%), but *L. infantum* kinetoplast DNA was amplified in 24 (16.5%) by real-time polymerase chain reaction (PCR). The mean intensity of parasitemia was 9 parasites/mL (range, 0.12–1500 parasites/mL). On univariate analysis, there was a significant relationship between the degree of parasitemia and plasma viral load, but not with CD4+ T cell count. Six patients with parasitemia were retested at their next clinic visit, and 5 of these, all of whom had elevated or stable CD4+ T cell counts, tested negative for *L. infantum* DNA, whereas 1 patient whose CD4+ T cell count had decreased had an increase in the parasite load.

*L. infantum* is endemic in the Mediterranean forests biome, where the primary reservoir is domestic dogs [1]. It causes both cutaneous [2] and visceral leishmaniasis. The latter has been identified in Cyprus, France, Greece, Italy, Malta, Portugal, and Spain, as well as in Albania and the Republic of Macedonia. The importance of this epidemiology became increasingly important because of its frequent clinical expression in patients with AIDS. Fortunately, since the introduction of highly effective antiretroviral therapy, the reported incidence has significantly decreased [3]. Nonetheless, the high incidence of asymptomatic infection continues to place a large number of patients at continued risk.

The insensitivity of antibody testing is not unexpected. Previous studies have found that fewer than one-half of HIV-infected patients with active visceral leishmaniasis have positive serological test results. PCR testing, in contrast, is highly sensitive. In southern France, the median parasite load in patients with visceral leishmaniasis was 310 parasites/mL but ranged from 8 to 1,400 parasites/mL [4]. Forty-seven (58%) of 81 healthy subjects living in this area of endemcity had PCR evidence of parasitemia, but the median parasite load was only 0.21 parasites/mL; none of 30 asymptomatic control subjects living in areas of eastern France where leishmaniasis was not endemic had positive PCR results. In Brescia, in northern Italy, the median parasite load was 1610 parasite/mL (range, 110–41,000 parasites/mL) in 10 patients with visceral leishmaniasis [5]. Leishmaniasis will clearly continue to be an ongoing problem in areas where it is endemic. Because the vector of *L. infantum* is present in large areas adjacent to the endemic zone, it may well become a problem over a larger geographic region.

References
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