

Paracoccidioidomycosis surveillance and control

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Dear Editor,

Paracoccidioidomycosis (PCM) is a systemic mycosis caused by *Paracoccidioides brasiliensis*, a thermally dimorphic fungus known to produce disease, primarily in individuals whose profession is characterized by intense and continuous contact with the soil. PCM presents a high incidence in Brazil, especially in the southeastern, southern and center-western regions of the country. On reporting the first two cases, in 1908, Adolpho Lutz presented the clinical picture and histopathological findings – tubercles with giant epithelioid cells and fungal specimens with exosporulation – of the infection. He cultured the fungus at different temperatures, demonstrating its mycelial and yeast phases, and reproduced the disease in guinea pigs (1). Few researchers in that era were so comprehensive when reporting a new disease and its etiological agent.

This deep mycosis prevails among men aged between 30 and 59 years, comprising their most productive working phase, with a gender ratio of 10:1 (2).

Analysis of 3,181 death certificates that reported PCM during the 16-year period from 1980 to 1995 revealed a mortality rate of 1.487 per one million inhabitants, indicating its considerable magnitude but low visibility (3). PCM was the eighth greatest cause of death from predominantly chronic or repetitive types of infectious and parasitic diseases in Brazil, surpassed only by AIDS, Chagas' disease, tuberculosis, malaria, schistosomiasis, syphilis and Hansen's disease. Behind PCM, in decreasing order of mortality, were ascariasis, other parasitoses, leishmaniasis, cysticercosis, other infectious diseases, cryptococcosis, toxoplasmosis, candidiasis, other mycoses, pneumocystis, histoplasmosis, aspergillosis, and lobomycosis.

PCM presents several characteristics that permit it to be considered a neglected disease: it occurs in poor and rural environments; disproportionately affects low-income populations; perpetuates a vicious cycle of the disease, between poverty and inadequate health care; does not receive attention from the developed world; is outside the purview of the Global Fund and its related programs; promotes poverty by causing long-lasting sequelae and devastating impacts on individual work productivity and quality of life; generally disables, rather than kills; involves patients who are not able to obtain the drug therapy; and, finally, it affects patients who frequently ask for medical care very late, when the disease is at an advanced stage (4-6). In addition, like several neglected tropical diseases, PCM has been extensively studied by researchers from developed countries or from renowned research centers in developing countries.

Surveillance and control programs constitute the first step to changing this condition and to offer better health care to PCM patients. The first program was established by the Paraná State Department of Health, in 2002, which decentralized the medical attention to PCM patients. State centers were divided into different regions, where mycological and serological diagnosis had become available and drug therapy was free. Moreover, the surveillance and control of PCM patients have enabled the evaluation of the number of cases and maintenance of treatment. However, the program is no longer available at the site of the Department of Health. After this successful project, others were created in the states of Rondônia, Mato Grosso do Sul and São Paulo.

The comprehensive state assistance program was structured in 1995 in Rondônia (7). Surveillance and mandatory notification were introduced in 2001, with serological diagnosis carried out by Oswaldo Cruz Institute in Rio de Janeiro. One year later the patients started receiving free medication.

PCM notification started in Mato Grosso do Sul state in January 2006, by the Hospital Epidemiology Center (8). Direct mycological and histopathological tests and culturing of clinical specimens have been performed in routine laboratory screening at the university hospital. The program also refers smokers to specialized assistance and offers orientation as to regularization of sick leaves.

In the São Paulo State Department of Health, a group of specialists, who have worked since 2005, proposed a manual with information about the ecology, epidemiology, clinical manifestations, diagnosis, case definition, treatment and

control of PCM, and also standardized a system of mandatory disease reporting. Drug therapy will be distributed for free to PCM patients. This manual was approved in June 2009 and the program is now being implemented starting with free distribution of drugs (9). In the next phase, laboratories that perform the mycological diagnosis in regional centers of the State Department of Health will be organized since serological diagnosis is made at the Adolfo Lutz Institute, in São Paulo City.

On September 26th and 27th 2007, the Secretariat of Health Surveillance of the Brazilian Ministry of Health held a workshop on PCM. Themes widely discussed in this event were: training for health professionals; assistance centers; regulation and distribution of drug therapy; standardization of the mycological, serological/immunological and histopathological diagnoses; methods for epidemiological investigation; and information system. A final report was composed to form the basis of a federal surveillance and control program on PCM. This program will be applied to other systemic mycoses.

Presently, PCM patients have been assisted as in- or outpatients at university hospitals, where diagnostic tests are performed. Specific antifungal treatment is offered to these patients only during hospitalization. Thus, the first challenge of these programs is the free distribution of cost-effective drugs. Fortunately, the market for antifungal drugs is continuously increasing to treat other systemic mycoses, mainly in immunosuppressed patients. The other challenge is the organization of laboratories for appropriate diagnosis in regional centers. Since pulmonary involvement is very frequent and can be misdiagnosed as tuberculosis, an integrated program for PCM and tuberculosis could be developed. Therefore, suspected cases of tuberculosis that present two negative sputum samples for acid-fast bacilli should have a third one evaluated for both acid-fast bacilli and fungal cells, followed by two more silver-stained samples. All the aforementioned measures can improve the medical assistance for PCM patients.

Finally, more emphasis should be placed on the need to define the true social and financial cost of PCM to better fight this disease where it is prevalent. Surveillance and control programs are an important manner of achieving this objective. Several measures still need to be taken, so that PCM will not be considered a neglected disease in the near future.

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