

Micetoma, una enfermedad neglecta

Mycetoma, a neglected disease.

Bonifaz A

La Organización Mundial de la Salud (OMS) declaró al micetoma como una enfermedad neglecta, eso significa que esta enfermedad se considera un padecimiento abandonado o descuidado y que es necesario se dé más impulso, recursos y búsqueda de áreas de trabajo, sobre todo enfocadas en el diagnóstico, e involucrar a laboratorios a producir medicamentos al alcance de los grupos más vulnerables. En México el micetoma está dentro de la franja ecológica con el mayor número de casos, sólo seguida de Sudán e India, por lo que esta declaratoria puede dar mayor número de recursos. A continuación se anexa el documento de GAFFI (*Global Action Fund for Fungal Infections*) en el que se informan de manera más detallada las primeras acciones de la OMS.



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**GAFFI for informal consultation on mycetoma.
24 March 2017.**

WHO headquarters, Geneva, Switzerland.

Information about generic itraconazole

- There are probably 200 companies selling itraconazole, but not all are manufacturers. This is the list for Brazil, as an example. These are the preparations currently available: Estiranox; Fungonax; Itracotan; Itrahexal; Itrallex costs \$0.78 per capsule - data sheet here: (http://www.anvisa.gov.br/datavisa/fila_bula/fmVisualizarBula.asp?pNuTransacao=7311862015&pIdAnexo=2805226); Itraspor; Itrazol; Neo Itrax; Sporanox costs \$6.39 per capsule.; Spozol; Traconal; Trazzol; Traxonol.
- In this link <http://www.gaffi.org/antifungal-drug-maps/> you can consult the maps of availability and price of antifungals.
- In this publication, you can find further relevant information: Matthew Kneale, Jennifer S. Bartholomew, Emma Davies and David W. Denning. Global access to antifungal therapy and its variable cost. J Antimicrob Chemother 2016; 71: 3599–3606. ECHO information At Project ECHO the mission is to democratize medical knowledge and help get best practice care to underserved people all over the world.
- Use Technology (multipoint videoconferencing and Internet) to leverage scarce healthcare resources;
- Case-based learning: Collaborative management of patients with subject matter experts (learning by doing) at academic medical centres or centres of excellence;
 - Guided practice via telementoring;
 - Establish and develop communities of practice and learning;

- Disease Management Model focused on improving outcomes by reducing variation in processes of care;
 - Brief didactic presentations
 - Sharing of evidence-based “best practices”
 - Reinforcing clinical guidelines, etc.
- Bruce Baird Struminger, MD, MA. Associate Director, ECHO Institute bstruminger@unm.edu. <http://echo.unm.edu>

Online training resource. Online microscopy training course now available which will have a fourth module added for rare fungal diseases including mycetoma. This will allow remote training: www.microfungi.net. Linked through www.LIFE-Worldwide.org Identify centres that can carry out mycetoma diagnostic testing

Europe

- Medical Mycology Reference Laboratory. National Centre for Microbiology. Instituto de Salud Carlos III. Majadahonda, Madrid, Spain. Contact person: Ana Alastruey Izquierdo, anaalastruey@isciii.es;
- Mycology Reference Centre Manchester. Education & Research Centre. Wythenshawe Hospital. Manchester M23 9LT, UK. Contact person: Malcolm Richardson, Malcolm.Richardson@manchester.ac.uk;
- PHE Mycology Reference Laboratory, Bristol, United Kingdom. Contact person: Andy Borman, Andy.Borman@uhBristol.nhs.uk;

India

- Department of Medical Mycology, Vallabhbhai Patel Chest Institute, University of Delhi, Delhi, India. Contact person: Anu-

radha Chowdhary, dranuradha@hotmail.com;

- WHO Collaborating Center for Reference & Research of Fungi of Medical Importance, Chandigarh, India. Contact person: Arunaloke Chakrabarti, arunaloke@hotmail.com

USA

- Mycology Branch. Center for Diseases Control. Atlanta. USA. Contact person: Tom Chiller, tnc3@cdc.gov ;

Mexico

- Department of Dermatology. Hospital General de México. Dr. Eduardo Liceaga Dr. Balmis 148. Colonia Doctores. CP. 06720. Cd. de México. México Contact person: Alexandro Bonifaz, a_bonifaz@yahoo.com.mx.

Companies involved in diagnosis for fungal diseases

- BioRad (www.bio-rad.com)
- Biosynex (<https://www.biosynex.com/fr/>)
- Bordier (<http://www.bordier.ch>)
- Dinamyker
- Erba molecular (<http://www.erbamdx.co.uk>)
- Immy (<http://www.immy.com>)
- Isca diagnostics (<https://www.iscadiagnostics.com>)
- Miravista (<http://miravistalabs.com>)
- Virion/Serion (<http://www.virion-serion.de/en/home.html>)

Diagnostic portfolio for Mycetoma Reference Centres

- Data base of ITS sequences of fungal species causing Eumycetoma:

Acremonium falciforme, *A. kiliense*, *A. recifei*, *Aspergillus flavus*, *A. nidulans*, *Blastriopsis mackinnonii*, *Cladophialophora bantiana*, *Cochliobolus spicifer*, *Corynespora cassicola*, *Curvularia geniculata*, *C. lunata*, *Cylindrocarpon cyanescens*, *C. destructans*, *Drechslera rostrata*, *Exophiala jeanselmei*, *Exserohilum rostratum*, *Falciformispora senegalensis*, *F. tompkinsii*, *Fusarium* spp., *Fusarium moniliforme*, *F. oxysporum*, *F. solani*, *Madurella grisea*, *M. mycetomatis*, *M. fahalii*, *M. pseudomycetomatis*, *M. tropicana*, *Medicopsis romeroi*, *Neotestudina rosatii*, *Phaeoacremonium krajdenii*, *Phialophora cyanescens*, *Pleurodomus avramii*, *Polycyrtella hominis*, *Pseudochaetosphaeronema larense*, *Rhizidhysterium rufulum*, *Roussoella percutanea*, *Trematosphaeria grisea*, *Trematosphaeria pertusa*, *Emarellia Borman*, *Emarellia grisea*, *Emarellia paragrisea*, *Scedosporium apiospermum* and *S. boydii*.

- Generic Real time PCR in clinical samples for a quick amplification and identification of mycetoma etiologic agents:
 - Amplification of ITS region plus fragment sequencing and identification of the fungi against a validated database of mycetoma etiologic agents;
- Identification of isolated strains in culture media by means of sequencing informative targets;
- Antifungal susceptibility testing of isolates by means of Reference Methodology (EUCAST or CLSI);

- TDM for antifungal drugs.

Research on diagnostics

- Development of a POC test for differentiation among negative, bacteria or fungi;
- Development of a quadriplex quantitative PCR for the most common species according to geographic areas;
- Development of a public ITS sequence data base with isolates causing mycetoma;
- Search for new informative sites for proper identification of isolates to level species (some species like *Fusarium* and *Scedosporium* are not well resolved by means of ITS sequencing);
- Development of a public antifungal susceptibility profile data base with molecular identified isolates causing mycetoma;
- Development of new methods for antifungal susceptibility testing of mycetoma agents, specially the slow growing and non-sporulating;
- Development of a collection and catalogue of strains causing mycetoma for education and research purposes;
- Development of a Maldi TOF data base for identification to species level of isolates causing mycetoma;
- Development of a Maldi TOF system for direct identification of etiologic agents in the grains;
- Identification of antigen candidates for serological diagnosis and its diagnostic value;
- Diagnostic value of antibodies against agents of mycetoma;
- Development of a collection and catalogue of human clinical samples (tissues, grains, plasma, serum, DNA, etc.) for research purposes;
- Analysis of host genetic risks factors by means of exome sequencing of sick and health people.