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Zhejiang Medical Association Society of Respiratory Diseases

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Cryptococcosis	Pulmonary cryptococcosis	Diagnosis	Treatment	Consensus
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54% ~ 70% 3 6

Cryptococcus neoformans

Cryptococcus gattii

1

C. neoformans var. *grubii*

A

C. neoformans var. *neoformans*

D

AD hybrid AD

B

C

7

VNI-VNIV

VGI-VGIV

90%

A

VNI

94% ~ 98% 8-11

12

1999

2006

6

38

HIV

2

13-14

2000

3

17% ~ 35% 4-5

VGI

ARDS

6 15

30% ~ 80%

6 16

X

CT

17



A.

B.

C.

D.

CT

18

HIV

0 ~ 40%

6 19

2.2

3.1

LFA

LA

6 19

LFA

6 20

1

10 cm

> 5 ~

21

LA

Meta

LFA

97.6%

98.1%²³

HIV

56%

LA

24

LA

1:512

1:32²⁵

LFA

LA

LA LFA

26

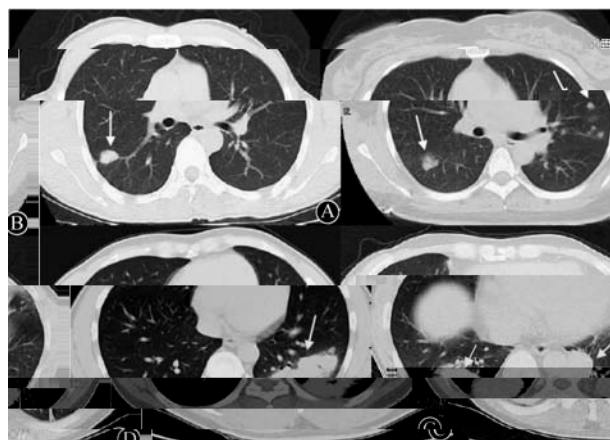
LA

BALF LA

2008

EORTC

27



A.

B.

C.

D.

CT

LFA

LFA

		200 ~ 400 mg/d	6		
		400 mg/d	6 ~ 12		
		B 0.5 ~ 1.0 mg · kg ⁻¹ · d ⁻¹		100 mg · kg ⁻¹ · d ⁻¹	≥
4		400 mg/d	8	200 mg/d	6 ~ 12
		400 mg/d	6 ~ 12		
HIV		B 0.5 ~ 1.0 mg · kg ⁻¹ · d ⁻¹		100 mg · kg ⁻¹ · d ⁻¹	≥2
		400 mg/d	≥8	200 mg/d	≥12
		B	3 ~ 4 mg · kg ⁻¹ · d ⁻¹	100 mg · kg ⁻¹ · d ⁻¹	
	≥2	400 mg/d	≥8	200 ~ 400 mg/d	6 ~ 12
		B 0.5 ~ 1.0 mg · kg ⁻¹ · d ⁻¹		100 mg · kg ⁻¹ · d ⁻¹	≥
4		400 mg/d	8	200 mg/d	6 ~ 12

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- Cryptococcus gattii* British Columbia Canada 1999-2007 J . Emerg Infect Dis 2010 16 2 251-257. DOI 10.3201/eid1602.090900.
- 3 . Meta C . 2009.
- Zhang HZ. Meta analysis of pulmonary cryptococcosis record in China mainland C . Shanghai Fudan University 2009.
- 4 Mirza SA Phelan M Rimland D et al. The changing epidemiology of cryptococcosis an update from population-based active surveillance in 2 large metropolitan areas 1992-2000 J . Clin Infect Dis 2003 36 6 789-794. DOI 10.1086/368091.
- 5 Kiertiburanakul S Wirojtananugoon S Prachartam R et al. Cryptococcosis in human immunodeficiency virus-negative patients J . Int J Infect Dis 2006 10 1 72-78. DOI 10.1016/j.ijid.2004.12.004.
- 6 Zhang Y Li N Zhang Y et al. Clinical analysis of 76 patients pathologically diagnosed with pulmonary cryptococcosis J . Eur Respir J 2012 40 5 1191-1200. DOI 10.1183/09031936.00168011.
- 7 Firacative C Roe CC Malik R et al. MLST and whole-genome-based population analysis of *Cryptococcus gattii* VGIII links clinical veterinary and environmental strains and reveals divergent serotype specific sub-populations and distant ancestors J . PLoS Negl Trop Dis 2016 10 8 e0004861. DOI 10.1371/journal.pntd.0004861.
- 8 Yuchong C Fubin C Jianghan C et al. Cryptococcosis in China 1985-2010 review of cases from Chinese database J . Mycopathologia 2012 173 5-6 329-335. DOI 10.1007/s11046-011-9471-1.
- 9 Chen J Varma A Diaz MR et al. *Cryptococcus neoformans* strains and infection in apparently immunocompetent patients China J . Emerg Infect Dis 2008 14 5 755-762. DOI 10.3201/eid1405.071312.
- 10 Fang W Fa Z Liao W. Epidemiology of *Cryptococcus* and cryptococcosis in China J . Fungal Genet Biol 2015 78 7-15. DOI 10.1016/j.fgb.2014.10.017.
- 11 Liaw SJ Wu HC Hsueh PR. Microbiological characteristics of clinical isolates of *Cryptococcus neoformans* in Taiwan serotypes mating types molecular types virulence factors and antifungal susceptibility J . Clin Microbiol Infect 2010 16 6 696-703. DOI 10.1111/j.1469-0691.2009.02930.x.
- 12 Smith RM Mba-Jonas A Toudjman M et al. Treatment and outcomes patients with *Cryptococcus gattii* infections in the United States Pacific Northwest J/OL . PLoS One 2014 9 2 e88875. DOI 10.1371/journal.pone.0088875.
- 13 Dou HT Xu YC Wang HZ et al. Molecular epidemiology of *Cryptococcus neoformans* and *Cryptococcus gattii* in China between 2007 and 2013 using multilocus sequence typing and the DiversiLab system J . Eur J Clin Microbiol Infect Dis 2015 34 4 753-762. DOI 10.1007/s10096-014-2289-2.
- 14 Xue X Wu H Wang K et al. Cryptococcosis by *Cryptococcus gattii* in China J . Lancet Infect Dis 2015 15 10 1135-1136. DOI 10.1016/S1473-3099 15 00301-1.
- 15 Ye F Xie JX Zeng QS et al. Retrospective analysis of 76 immunocompetent patients with primary pulmonary cryptococcosis J . Lung 2012 190 3 339-346. DOI 10.1007/s00408-011-9362-8.
- 16 . 20 J . 2014 35 6 549-551. DOI 10.3969/j.issn.2095-5227.2014.06.008.
- Zhao W Jin FH Chen LA. Analysis of pulmonary cryptococcosis in Chinese PLA General Hospital in 20 years J . Acad J Chin PLA Med Sch 2014 35 6 549-551. DOI 10.3969/j.issn.2095-5227.2014.06.008.
- 17 Vilchez RA Linden P Lacomis J et al. Acute respiratory failure associated with pulmonary cryptococcosis in non-AIDS patients J . Chest 2001 119 6 1865-1869. DOI 10.1378/chest.119.6.1865.
- 18 Orsini J Blaak C Tam E et al. Disseminated cryptococcal infection resulting in acute respiratory distress syndrome ARDS as the initial clinical presentation of AIDS J . Intern Med 2016 55 8 995-998. DOI 10.2169/internalmedicine.55.5768.
- 19 Kohno S Kakeya H Izumikawa K et al. Clinical features of pulmonary cryptococcosis in non-HIV patients in Japan J . J Infect Chemother 2015 21 1 23-30. DOI 10.1016/j.jiac.2014.08.025.
- 20 . CT J . 2014 33 10 1510-1513.
- Xie LX Chen YS Liu SY et al. CT findings of pulmonary cryptococcosis in immunocompetent and immunocompromised patients a comparison study J . Journal of Clinical Radiology 2014 33 10 1510-1513.
- 21 Garrett L Marr K West S et al. 74-year-old man from the pacific northwest with fever and a lung mass J . Chest 2011 140 3 814-817. DOI 10.1378/chest.10-2964.
- 22 Liu K Ding H Xu B et al. Clinical analysis of non-AIDS patients pathologically diagnosed with pulmonary cryptococcosis J . J Thorac Dis 2016 8 10 2813-2821. DOI 10.21037/jtd.2016.10.36.
- 23 Huang HR Fan LC Rajbanshi B et al. Evaluation of a new cryptococcal antigen lateral flow immunoassay in serum cerebrospinal fluid and urine for the diagnosis of cryptococcosis a meta-analysis and systematic review J/OL . PLoS One 2015 10 5 e0127117. DOI 10.1371/journal.pone.0127117.
- 24 Pappas PG Perfect JR Cloud GA et al. Cryptococcosis in human immunodeficiency virus-negative patients in the era of effective azole therapy J . Clin Infect Dis 2001 33 5 690-699. DOI 10.1086/322597.
- 25 Singh N Alexander BD Lortholary O et al. Pulmonary

- cryptococcosis in solid organ transplant recipients: clinical relevance of serum cryptococcal antigen J . Clin Infect Dis 2008 46 2 e12-18. DOI 10.1086/524738.
- 26 Jitmuang A Panackal AA Williamson PR et al. Performance of the cryptococcal antigen lateral flow assay in non-HIV-related cryptococcosis J . J Clin Microbiol 2016 54 2 460-463. DOI 10.1128/JCM.02223-15.
- 27 De Pauw B Walsh TJ Donnelly JP et al. Revised definitions of invasive fungal disease from the European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and the National Institute of Allergy and Infectious Diseases Mycoses Study Group EORTC/MSG Consensus Group J . Clin Infect Dis 2008 46 12 1813-1821. DOI 10.1086/588660.
- 28 Thomaz DY Grenfell RC Vidal MS et al. Does the capsule interfere with performance of matrix-assisted laser desorption ionization-time of flight mass spectrometry for identification of *Cryptococcus neoformans* and *Cryptococcus gattii* J . J Clin Microbiol 2016 54 474-477. DOI 10.1128/JCM.02635-15.
- 29 Choi KH Park SJ Min KH et al. Treatment of asymptomatic pulmonary cryptococcosis in immunocompetent hosts with oral fluconazole J . Scand J Infect Dis 2011 43 5 380-385. DOI 10.3109/00365548.2011.552521.
- 30 Perfect JR Dismukes WE Dromer F et al. Clinical practice guidelines for the management of cryptococcal disease 2010 update by the Infectious Diseases Society of America J . Clin Infect Dis 2010 50 3 291-322. DOI 10.1086/649858.
- 31 Marques S Carmo R Ferreira I et al. Cryptococcosis in renal transplant recipients: a single-center experience J . Transplant Proc 2016 48 7 2289-2293. DOI 10.1016/j.transproceed.2016.06.006.
- 32 Alexander BD Perfect JR Daly J et al. Posaconazole as salvage therapy in patients with invasive fungal infections after solid organ transplant J . Transplantation 2008 86 6 791-796. DOI 10.1097/TP.0b013e3181837585.
- 33 Bandettini R Castagnola E Calvillo M et al. Voriconazole for cryptococcal meningitis in children with leukemia or receiving allogeneic hemopoietic stem cell transplant J . J Chemother 2009 21 1 108-109. DOI 10.1179/joc.2009.21.1.108.
- 34 Musubire AK Boulware DR Mehta DB et al. Diagnosis and management of cryptococcal relapse J . J AIDS Clin Res 2013 Supple 3 3 pii S3-003. DOI 10.4172/2155-6113.S3-003.