

# 대한의진균학회 제18차 학술대회 초록

● 일 시 : 2011년 9월 3일(토)

● 장 소 : 서울 건국대병원 대강당



주최 : 대한의진균학회  
대한피부과학회 피부진균연구회

# 대한의진균학회 제18차 학술대회 초록

● 일 시 : 2011년 9월 3일(토)

● 장 소 : 서울 건국대병원 대강당



주최 : 대한의진균학회  
대한피부과학회 피부진균연구회



◆ 대한의진균학회 제18차 학술대회 진행계획표 ◆

	시 간	내 용
9월 3일	08:30 ~ 09:00	등 록
	09:00 ~ 09:10	개회식
	09:10 ~ 09:30	수혜자 보고 1 (조소연)
	09:30 ~ 09:50	수혜자 보고 2 (이미우)
	09:50 ~ 10:30	해외 초청연자 특강 1 (Takashi Mochizuki)
	10:30 ~ 10:50	Coffee break
	10:50 ~ 11:30	해외 초청연자 특강 2 (Kusmarinah Bramono)
	11:30 ~ 12:00	교육강연 1 (Jin Yu)
	12:00 ~ 13:30	기념촬영, 평의원회 및 중식
	13:30 ~ 14:10	해외 초청연자 특강 3 (Chunyang Li)
	14:10 ~ 14:40	교육강연 2 (김광호)
	14:40 ~ 15:00	Coffee break
	15:00 ~ 15:30	교육강연 3 (이상오)
	15:30 ~ 16:10	일반연제
	16:10 ~ 16:30	폐회식 및 총회

▶ 학술대회 진행 시 유의 사항

1. 연제 발표자는 미리 10분 전에 앞줄에 대기하여 주시기 바랍니다.
2. 일반 연제는 원저인 경우 발표 7분, 임상증례는 발표 5분입니다.
3. 연제를 발표 1시간 전에 접수하여 주십시오.



◆ 18th Annual Meeting of Korean Society for Medical Mycology ◆

	Time	Content
9 month 3 day	08 : 30 ~ 09 : 00	Registration
	09 : 00 ~ 09 : 10	Opening announcement
	09 : 10 ~ 09 : 30	Report 1 by recipients of grant (Soyun Cho, Korea)
	09 : 30 ~ 09 : 50	Report 2 by recipients of grant (Mi-Woo Lee, Korea)
	09 : 50 ~ 10 : 30	Special lecture 1 by invited speaker (Takashi Mochizuki, Japan)
	10 : 30 ~ 10 : 50	Coffee break
	10 : 50 ~ 11 : 30	Special lecture 2 by invited speaker (Kusmarinah Bramono, Indonesia)
	11 : 30 ~ 12 : 00	Educational lecture 1 (Jin Yu, China)
	12 : 00 ~ 13 : 30	Photo session, board meeting & lunch
	13 : 30 ~ 14 : 10	Special lecture 3 by invited speaker (Chunyang Li, China)
	14 : 10 ~ 14 : 40	Educational lecture 2 (Kwang Ho Kim, Korea)
	14 : 40 ~ 15 : 00	Coffee break
	15 : 00 ~ 15 : 30	Educational lecture 3 (Sang-Oh Lee, Korea)
	15 : 30 ~ 16 : 10	Free communication
	16 : 10 ~ 16 : 30	Closing

## ◆ 대한의진균학회 제18차 학술대회 연제 순서 ◆

### ■ 수혜자 보고 1 : 09:10 – 09:30

제 목 : Histopathologic Findings of Tinea Corporis

연 자 : Soyun Cho (Seoul National University, Korea)

좌 장 : 원영호 교수(전남의대)

### ■ 수혜자 보고 2 : 09:30 – 09:50

제 목 : Clinical Analysis of Deep Cutaneous Mycoses:  
A 12-year Experience at a Single Institution in Korea

연 자 : Mi-Woo Lee (Asan Medical Center, Korea)

좌 장 : 우준희 교수(울산의대)

### ■ 해외 초청연자 특강 1 : 09:50 – 10:30

제 목 : Recent Molecular Approaches for the Epidemiology of Dermatormycoses

연 자 : Takashi Mochizuki (Kanazawa Medical University, Japan)

좌 장 : 김기홍 교수(영남의대)

☎ 10:30 ~ 10:50 Coffee Break ☎

### ■ 해외 초청연자 특강 2 : 10:50 – 11:30

제 목 : Chronic Recurrent Dermatophytosis in the Tropics: Studies on Tinea Imbricata in Indonesia

연 자 : Kusmarinah Bramono (University of Indonesia, Indonesia)

좌 장 : 조백기 교수(가톨릭의대)

### ■ 교육강연 1 : 11:30 – 12:00

제 목 : *Mucor irregularis*, a Primary Human Pathogen

연 자 : Jin Yu (Peking University, China)

좌 장 : 유희준 교수(한양의대)

☎ 12:00 ~ 13:30 기념촬영, 평의원회 및 중식 ☎

### ■ 해외 초청연자 특강 3 : 13:30 – 14:10

제 목 : Chromoblastomycosis in China

연 자 : Chunyang Li (Shandong University, China)

좌 장 : 노병인 교수(관동의대)

■ 교육강연 2 : 14:10 - 14:40

제 목 : Immunology of Dermatophytosis

연 자 : Kwang Ho Kim (Hallym University)

좌 장 : 안규중 교수(건국의대)

14:40 ~ 15:00 Coffee Break

■ 교육강연 3 : 15:00 - 15:30

제 목 : Unusual Skin and Soft Tissue Infections after Transplantation

연 자 : Sang-Oh Lee (Asan Medical Center, Korea)

좌 장 : 문기찬 교수(울산의대)

■ 일반 연제 FC-1 ~ FC-7 : 15:30 - 16:10

좌 장 : 최종수 교수(영남의대) · 서무규 교수(동국의대)

FC-1. Comparison of Therapeutic Efficacy on Various Clinical Type of  
Distal Lateral Subungual Onychomycosis

..... 방철환, 이영복, 박현정, 조백기 /  
가톨릭대학교 의과대학 성모병원 피부과학교실

FC-2. Diagnosis of Onychomycosis: Is it Possible to Establish the  
Diagnosis of Onychomycosis with Clinical Characteristics?

..... 박지혜, 정미영, 이동운 / 성균관대학교 의과대학 삼성서울병원

FC-3. 한 가족 내에서 애완 고양이로부터 발생한 것으로 추정되는  
농창상 *M. canis* 감염증

..... 윤상돈, 류한원, 조재위, 이규석 / 계명대학교 의과대학 피부과학교실

FC-4. *Paecilomyces lilacinus*에 의한 국소 피부감염증

..... 조용선, 황수란, 송기훈, 이종선, 박진, 윤석권, 김한옥 /  
전북대학교 의학전문대학원 피부과학교실

FC-5. *Chaetomium globosum*에 의한 손발톱진균증

..... 서무규, 김동민, 이명훈, 하경임<sup>1</sup> /  
동국대학교 의과대학 피부과학교실, 진단검사의학교실<sup>1</sup>

---

FC-6. A Case of Mucocutaneous Candidiasis Mimicking Lichen Planus

..... Byong Han Song, Eun Joo Park, In Ho Kwon, Kwang Ho Kim, Kwang Joong Kim /  
Department of Dermatology, College of Medicine Hallym University  
Sacred Heart Hospital, Anyang, Korea

FC-7. Cutaneous Blastomycosis

..... 박세원, 박혜영, 이동윤 / 성균관의대 삼성서울병원 피부과

 ● 16:10 ~ 16:30 폐회식 및 총회 ● 

## 특별 강연 (Special Lecture)

특별 강연 1

Takashi Mochizuki

특별 강연 2

Kusmarinah Bramono

특별 강연 3

Chunyang Li



## 특별 강연 1 (Special Lecture 1)

### Recent Molecular Approaches for the Epidemiology of Dermatomycoses

**Takashi Mochizuki**

*Department of Dermatology, Kanazawa Medical University  
1-1 Daigaku, Uchinada, Ishikawa, Japan 920-0291*

Methods of identifying fungal strains isolated from dermatomycoses have recently been evolving and molecular techniques are available for quicker species identification. For species identification, restriction fragment length polymorphisms of mitochondrial (mt) DNA, and nucleotide sequence data such as the D1/D2 regions or internal transcribed spacer regions of ribosomal RNA gene (rDNA) are widely used for dermatophytes or dematiaceous fungi. During development of these molecular methods, some intraspecies variations have been detected, which facilitate intraspecies level typing and further strain identification useable in molecular epidemiologic studies. The discrimination power depends on the nucleotide sequence variation within the target molecules and the detection system used. Therefore appropriate molecular methods for subspecies typing and strain identification should be selected carefully according to the fungal species and the purpose of the study. For example, mtDNA is suitable for intraspecies typing in *Sporothrix schenckii* but a more sensitive marker is required for dermatophyte species. In this lecture, I will give a short review of methods used in molecular epidemiology, then introduce some studies of dermatophyte species including *Trichophyton mentagrophytes* var. *interdigitale* and *Trichophyton tonsurans* using non-transcribed spacer regions of rDNA.

## ● CURRICULUM VITAE ●

### Name

Takashi Mochizuki

### Personal

Date of Birth: 14 March, 1956

### ◆ Education ◆

- |             |   |
|-------------|---|
| 1975 ~ 1981 | Hirosaki University, Aomori, Japan, M.D.                                  |
| 1982 ~ 1986 | Graduate School, Shiga University of Medical Science, Shiga, Japan, Ph.D. |

### ◆ Professional experience ◆

- |                |  |
|----------------|--|
| 1991 ~ 1992    | Visiting Researcher, Department of Botany,<br>University of Texas at Austin, Texas, USA.   |
| 1992 ~ 1993    | Visiting Professor (Associate), Department of Plant Pathology,<br>University of California at Riverside, California, USA.                            |
| 1986 ~ 1997    | Instructor, Department of Dermatology,<br>Shiga University of Medical Science, Shiga, Japan.   |
| 1997 ~ 2005    | Associate Professor, Department of Dermatology,<br>Kanazawa Medical University, Ishikawa, Japan.   |
| 2005 ~ Present | Professor, Division of Dermatomycology (Novartis Pharma),<br>Research Institute of Medical Science,<br>Kanazawa Medical University, Ishikawa, Japan. |
| 2005 ~ Present | Professor, Department of Dermatology,<br>Kanazawa Medical University, Ishikawa, Japan.   |



## 특별 강연 2 (Special Lecture 2)

### Chronic Recurrent Dermatophytosis in the Tropics: Studies on *Tinea Imbricata* in Indonesia

**Kusmarinah Bramono**

*Department of Dermato-Venereology, Faculty of Medicine University of Indonesia, Jakarta*

#### **Abstract**

Dermatophytosis is one of major public health problems in tropical countries, especially the chronic recurrent type. *Tinea imbricata* (TI), a dermatophytosis caused by *Trichophyton concentricum* (TC) is endemic in several remote and isolated areas in Indonesia. This dermatophytosis is unique due to its predominant genetic predisposition, which leads to chronic recurrent conditions among the affected. Moreover, hot and humid climate, low socio-economic conditions, lack of hygiene, inadequate treatment due to difficult access to health care facilities, and persistence source for re-infections are among other factors that keep on maintaining the condition.

Studies on TI in Indonesia had been done since 1960s. Several aspects on TI e.g. the epidemiology, clinical features, efficacy of antifungal treatment, can be obtained from those studies. Griseofulvin is still the mainstay treatment, but relapse rates were high. The last study conducted in West Papua combining griseofulvin treatment with health education for local health care providers and providing the patients with fungal disinfectant for clothing and bedding. Higher cure rates at the end of treatment and the four-month's later were obtained, in comparison to the previous studies. Parallel studies on the same patient populations showed that: 1. Clothing and bedding were fomites and potential sources of re-infections; 2. Sodium hypochlorite worked well as a fungal disinfectant, followed by anionic detergent and pine oil tar containing cleaner; 3. *In vitro*, terbinafine was the most effective antifungal agent for TC, followed by griseofulvin; itraconazole, and fluconazole were less effective.

## ● CURRICULUM VITAE ●

Name : Kusmarinah Bramono

Date of Birth : April 20, 1950

### ◆ Education ◆

- 1974 - Medical Doctor, University of Indonesia, Jakarta, Indonesia.
- 1987 - Specialist in Dermato-Venereology, University of Indonesia, Jakarta, Indonesia.
- 1988 - Certificate on Mycology Course, University of Indonesia, Jakarta, Indonesia.
- 1992 - Diploma on Dermato-Mycology Research, Juntendo University School of Medicine, Tokyo, Japan.
- 2006 - Doctoral degree, Department of Dermatology, Juntendo University School of Medicine, Tokyo

### ◆ Previous Academic Appointments ◆

- 2002 ~ 2009 - Head of Sub-Department of Dermatormycology,  
Dept. of Dermato-Venereology, Faculty of Medicine, University of Indonesia

### ◆ Current Academic Appointments ◆

- 2007 ~ - Member of the Ethical Committee for Medical and Health Sciences,  
Fac. of Medicine, Univ. of Indonesia / Cipto Mangunkusumo Hospital
- 2009 ~ - Chair of Postgraduate Training for Dermato-Venereology,  
Fac. of Medicine, Univ. of Indonesia / Cipto Mangunkusumo Hospital

### ◆ Current Organization Appointments ◆

- 1999 ~ - Executive Secretary of the Indonesian Study Group on Dermatormycoses
- 2004 ~ - President of the Indonesian Society for Human and Animal Mycology
- 2005 ~ - Board of Directors, the Asia Pacific Society for Medical Mycology
- 2008 ~ - Chair of the Indonesian College of Dermato-Venereology

### ◆ Some Publications ◆

1. Bramono K, Pemayun TP, Darodjatun B, Djuanda A. Herpes zoster ophthalmicus (a retrospective study); *Majalah Kedokteran Indonesia (Indonesian Medical Journal)* 1984;34:159-163
2. Bramono K, Boediardja SA. Scabies. *Media Dermatovenereologica Indonesiana* 1985:33
3. Moertolo TF, Bramono K. Application of vitamins in dermatology. *Media Dermatovenereologica Indonesiana* 1990;17:47-54
4. Bramono K, Tsuboi R, Murai M, Miyakawa Y, Fukazawa Y, Ogawa H. Scanning electron microscope

observation of adherence of *Candida albicans* to cultured keratinocytes. J Med Vet Mycol 1994;32: 473-476

5. Budimulja U, Kuswadji, Bramono K, Basuki S, Judanarso J, Untung LS, Widagdo S, Rohprabowo, Widyanto, Koesanto D, et al. A double-blind, randomized, stratified controlled study of the treatment of tinea imbricata with oral terbinafine or itraconazole. Br J Dermatol 1994; 130 suppl. 43:29-31
6. Tsuboi R, Ogawa H, Bramono K, Richardson MD, Shankland GS, Crozier WJ, Sei J, Ninomiya J, Nakabayashi A, Takiuchi I, Payne CD, Ray TL. Pathogenesis of superficial mycoses. J Med Vet Mycol 1994; 32, suppl 1:91-104
7. Randhawa HS, Budimulja U, Bazas-Malik G, Bramono K, Hiruma M, Kullavanijaya P, Rojanavanich V. Recent developments in the diagnosis and treatment of subcutaneous mycoses. J Med Vet Mycol 1994; 32, suppl 1:299-307
8. Bramono K, Tsuboi R, Ogawa H. A carbohydrate-degrading enzyme from *Candida albicans*: correlation between  $\alpha$ -glucosidase activity and fungal growth. Mycoses 1995;38:349-353
9. Dewi S, Bramono K, Wiryadi BE. The role of vaccination in morbus Hansen. Media Dermatovenereologica Indonesiana 1995;3:31-134
10. Bramono K, Kuswadji, Sainan E, Azis W, Budimulja U. Clinical comparative study of combination cream clotrimazole and betamethason dipropionate vs miconazole nitrate and hydrocortisone in cutaneous candidosis. Majalah Kedokteran Indonesia (Indonesian Medical Journal) 1996;46:149-153
11. Bramono K, Kuswadji, Budimulja U. Pulse dose treatment of itraconazole in onychomycosis (preliminary report). Indonesian Journal of Pharmacology and Therapy 1996;12:13-16
12. Tristianawati W, Bramono K. Antihistamines for skin diseases. Media Dermatovenereologica Indonesiana 1998;25:38-46
13. Bramono K. Onychomycoses in Indonesia: epidemiology and management. Media Dermatovenereologica Indonesiana 1999;4:158-163
14. Yudistirawaty, Bramono K. The role of zinc in dermatology. Media Dermatovenereologica Indonesiana 1999;26:43-48
15. Bramono K, Kuswadji U, Budimulja U. The efficacy and safety of butenafine cream 1% vs bifonazole cream 1% in the treatment of tinea cruris and/or corporis: a double blind randomized controlled study in two hospitals. Majalah Kedokteran Indonesia (Indonesian Medical Journal) 2000;50:219-223
16. Budimulja U, Bramono K, Urip KS, Basuki S, Widodo G, Rapatz G, Paul C. Once daily treatment with terbinafine cream (Lamisil®) for 1 week is effective in the treatment of tinea corporis and cruris. Mycoses 2001;44:1-7
17. Dameria L, Bramono K. Pathogenesis of vulvovaginal candidosis. Indonesian Journal of Medical Mycology 2001;2:149-154
18. Poerwanto I, Bramono K, Budiardja SA. Isolation and species of *Candida* from the mouth, rectum and vagina of patients with Candidal and non-Candidal fluor albus. Indonesian Journal of Medical Mycology 2002;3:14-19
19. Indrarini, Bramono K, Urip KS, Daili SF. Prevalence of *Malassezia* folliculitis among patients with

- acne vulgaris and acneiformis eruption at Cipto Mnagunkusumo Hospital Jakarta. *Media Dermatovenereologica Indonesiana* 2004;31:41-47
20. Febrianti T, Bramono K. Adjuvant therapy for pemphigus. *Media Dermatovenereologica Indonesiana* 2004;2:94-103
  21. Legiawaty L, Sudarmi E, Bramono K, Sjaiful FD. The role of *Malassezia*, sp. in atopic dermatitis. *Media Dermatovenereologica Indonesiana* 2004;1:41-47
  22. Pratiwi D, Bramono K, Wasitaatmadja SM. The role of chronic sun exposure: pathogenesis of photoaging and photocarcinogenesis. *Media Dermatovenereologica Indonesiana* 2005;32:31-37
  23. Bramono K, Budimulja U. Epidemiology of onychomycoses in Indonesia: data obtained from three individual studies. *Jpn J Med Mycol* 2005;46:171-176
  24. Bramono K, Yamazaki M, Tsuboi R, Ogawa H. Comparison of proteinase, lipase and alpha-glucosidase activities from the clinical isolates of *Candida* species. *Jpn J Infect Dis* 2006;59:73-76
  25. Septrida QD, Widaty S, Bramono K, Pratomo US. Unusual manifestation of dermatophytosis on systemic lupus erithematous patient. *Indonesian Journal of Medical Mycology* 2007;7:9-11
  26. Bramono K, Menaldi SL, Widaty S, Hernani Ch. The prevalence of skin diseases, risk factors for dermatomycoses and dermatophyte species isolated form cases with dermatophytoses: a survey in a rural low land area in West Java. *Media Dermatovenereologica Indonesiana* 2008;35:2-7
  27. Krisanty RI, Bramono K, Made Wisnu I. Identification of *Malassezia* species from pityriasis versicolor in Indonesia and its relationship with clinical characteristics. *Mycoses* 2009;52:257-62

### 특별 강연 3 (Special Lecture 3)

## Chromoblastomycosis in China

Chunyang Li, M.D.

Qilu Hospital Shandong University Jinan, 250012, China

The first case of Chromoblastomycosis in china was reported in 1951. Almost 400 patients had been found by the end of 1999, more than 300 of them coming from Shandong province and others scattering in 14 provinces. Another 73 cases were reported from 2000 to 2011. About 86% of all patients live on agriculture. Most of them are men (the male-to-female ratio is 4:1) and at the age of 20~60 years with the youngest at 11 months and the oldest at 85 years. The causative agent mainly involved is *Cladophialophora carrionii* in northern china, especially in Shandong province. An investigation showed *C. carrionii* was isolated from wild toads in endemic area of Shandong province, while none from non-endemic area. The results suggested that wild toads might be associated with endemicity of Chromoblastomycosis. In southern china, *Fonsecaea pedrosoi* is once common, while in 2008, a study demonstrated that in 24 identified isolates of *F. pedrosoi* from symptomatic patients, 20 strains were *Fonsecaea monophora* by re-evaluation. So it seems that *F. monophora* is the predominant etiologic agent in south area. Only six cases are caused by *Phialophora verrucosa* in china. Most patients have a long course about 5 to 20 years with the shortest one being 1 month and the longest one lasting 50 years. Hands and arms are the most frequently infected sites (about 67.4%). Next sites involved are feet and legs (27.1%). Faces, shoulders, trunks and buttocks are involved in few cases. Squamous cell carcinoma occurs in the infected lesions of four cases with long course. Treatment includes: (1) Operation. Fifty-six cases are cured by cutting off the lesions. (2) Topical drug treatment. Fifty-nine are cured with local application of 30% glacial acetic acid. Other drugs used include 0.2 mg/ml amphotericin B, 10% potassium iodide ointment and infusion of medicinal herb. (3) Physiotherapy includes electrocautery, laser, X-rays and liquid nitrogen frozen. (4) Systemic antifungal drugs. The most common drugs are itraconazole (200~400 mg/d) and terbinafine (250~500 mg/d). Amphotericin B, 5-FC, clotrimazole, fluconazole and ketaconazole are also used in some patients.

## ● CURRICULUM VITAE ●

Dr. Chunyang Li graduated from Shandong Medical College in 1974, and she got the master's degree in 1981. From 1988 to 1991, she studied in Peking Union Medical College on medical mycology and obtained her doctor's degree in 1991.

From 1974 to 1978, she worked as a resident in dermatological dept. of the affiliated hospital of Shandong Med. Univ.. In 1986, she promoted to attending physician and in 1996, obtained the professional title of chief physician and professor. In 1996, she was selected as a master tutor, and in 2002, as a doctor tutor. From 1992 to 2000, she was the director of the Dept. of Dermatology, Qilu Hospital of Shandong Univ. From 2003 to 2011 she was the chairman of Society for Dermatology, Medical Association of Shandong Province.

Now, she is:

- Honorary chairman of Society for Dermatology, Medical Association of Shandong Province
- Committee member of Society for Dermatology and Venereology, Medical Association of China
- Committee member of National Association for Microbiology, Mycological Branch
- Member of International Society for Human and Animal Mycology and committee member of ISHAM branch in China
- Member of EADV
- Editor, Chinese J. of Dermatology, Chinese J of Mycology

## 교육 강연 (Educational Lecture)

교육 강연 1

Jin Yu

교육 강연 2

Kwang Ho Kim

교육 강연 3

Sang-Oh Lee





## 교육 강연 1 (Educational Lecture)

### *Mucor irregularis*, a Primary Human Pathogen

Jin Yu, Sibin Wang and Ruoyu Li

Department of Dermatology and Venereology, Research Center for Medical Mycology  
Peking University First Hospital

*Mucor irregularis* (former *Rhizomucor variabilis*) has been identified as an emerging human pathogen mostly isolated in Asia areas, occasionally outside of Asia recently. It can infect humans to cause primary cutaneous zygomycosis. In China, *M. irregularis* is the most common etiologic agent in primary cutaneous zygomycosis, which usually presents as a subacute or chronic infectious process. The patients usually have no severe underlying diseases/disorders. *M. irregularis* has a characteristic morphological appearance. It shows underdeveloped rhizoids which make it misclassified as a *Rhizomucor* species. New molecular taxonomic studies proved *M. irregularis* belongs to a *Mucor* species. Like *M. irregularis*, *Rhizomucor regularior* and *R. chlamydosporus*, the mesophilic species in *Rhizomucor*, have been reclassified to *M. circinelloides* and *M. indicus*, respectively. All the above species have been found to be related to subacute or chronic cutaneous zygomycosis in China. We have studied eleven clinical isolates of *Mucor* spp. from cases of chronic cutaneous zygomycosis. They were identified both by morphological and molecular methods which have a high degree of correlation. The *in vitro* susceptibility of the isolates to seven antifungal agents (amphotericin B, itraconazole, terbinafine, voriconazole, fluconazole, flucytosine, micafungin) was tested; amphotericin B was the most active agent against all the species in this study. We also reviewed clinical cases of primary cutaneous zygomycosis in China and several interesting cases will be shown.

## ● CURRICULUM VITAE ●

Chinese Name : Yu Jin

E-mail : yujin676@gmail.com, jinyu@medmail.com.cn

### ◆ EDUCATION ◆

1993 ~ 1998	Peking University, B.Sc. degree
1998 ~ 2000	Peking University, M.S. degree
2000 ~ 2003	Peking University, M.D., PhD.

### ◆ PROFESSIONAL EXPERIENCE ◆

1998 ~ 2003	Resident, Department of Dermatology, Peking University First Hospital
2003 ~ 2007	Attending physician, Department of Dermatology, Peking University First Hospital, Peking University Research Center for Medical Mycology
2007 ~ now	Associate Professor, Department of Dermatology, Peking University First Hospital, Peking University Research Center for Medical Mycology

### ◆ MAJOR INTEREST ◆

Medical Mycology, Epidemiology, Therapy and Diagnosis, Clinical Dermatology

### ◆ PUBLICATIONS ◆

Wang Si bu, Li Ruo yu, **Yu Jin**. Identification and susceptibility of *Rhizomucor* spp. isolated from patients with cutaneous zygomycosis in China. Med Mycol (English) 2011

Ru-Zhen Chou, Ruo-yu Li, **Jin Yu**. *Candida albicans* anti-oxidant genes expression *in vivo* vaginal candidiasis. Chin J Derm Venereol 2010;24(11):995-998

**Jin Yu**, Ruoyu Li, Lujuan Gao, et al. Utility of Galactomannan Enzyme Immunoassay and (1,3)β-D-glucan assay in Invasive Fungal Infection. Natl Med J China 2010;90(6):371-374

**Jin Yu**, Ruoyu Li, Min Zhang, Li Liu, Zhe Wan. *In vitro* interaction of terbinafine with itraconazole and amphotericin B against fungi causing chromoblastomycosis in China. Medical Mycology 2008;46(7): 745-747 (English)

**Jin Yu**, Ruoyu Li, Xiaohong Wang, Zhe Wan, Duanli Wang. Morphological Studies on *Scropulariopsis* spp. Isolated from Patient Nails. Clin J Dermatol 2008;37(9):564-567

**Jin Yu**, Aiping Wang, Jianzhong Zhang, Ruoyu Li. The Efficacy and Safety of Fusidic Acid Cream in the Treatment of Bacterial Skin Infections. Clin J Dermatol 2008;37(9):615-616

**Jin Yu**, Min Zhang, Jianlei Wang, et al. *Candida* species distribution in the patients with high risk of deep fungal infections and relevant risk factors: a prospective cohort study. Natl Med J China 2007;87(42)

- Jin Yu**, Min Zhang, Ruoyu Li, Weilin Xu, Hanyun Ren, Yixin Song. Fluconazole prophylactic treatment affect the drug susceptibility *in vitro* of *Candida* spp strains isolated from the patients with high risk of deep fungal infections. Chin J Lab Med 2007;30(1)
- Jin Yu**, Shuxia Yang, Yi Zhao, Ruoyu Li. A Case of Subcutaneous Phaeohyphomycosis Caused by *Chaetomium globosum* and the sequences analysis of *C. globosum*. Medical Mycology 2006;44 (English)
- Jin Yu**, Ruo yu Li. Primary Renal Zygomycosis Due to *Rhizopus Oryzae*: Report of A Case. Medical Mycology 2006;44 (English)
- Jin Yu**, Ruoyu Li, Glenn Bulmer. Current Topics of Tinea Capitis in China. Japaneses Journal of Medical Mycology 2005;46(2) (English)
- Yu J**, Li RY, et al. The Morphological and Molecular Biological Study of the Rare Pathogenic *Chaetomium* spp. Clin J Dermatol 2005;34(8)
- Yu J**, Li RY. Fungal infection in Urinary System. Natl Med J China 2004;84:24
- Yu J**, Chen W, Wan Z, Li RY. Adult Tinea Capitis Due to *Trichophyton violaceum* in China. Mycopathologia 2004;157:49-52 (English)
- Yu J**, Wan Z, Chen W, Li RY. Molecular typing study of the *Microsporum canis* strains isolated from an outbreak of tinea capitis in a school. Mycopathologia 2004;157:37-41 (English)
- Yu J**, Li RY. The Study on Early Diagnosis of Invasive Aspergillosis by ELISA Assay and Nest PCR Method. Chinese J Lab Med 2003;26(9):543-546
- Yu J**, Wan Z, Li RY. Report of an Outbreak of Tinea Capitis caused by *Microsporum canis*. Chinese J Dermatol 2003;36(8):427-429
- Yu J**, Ji Z H, Li RY. Identificanton of Common Pathogenic *Candida* Species by PCR-RFLP Analysis. Chinese J Dermatol 2002;35(2):131-133
- Yu J**, Li R Y, Wang D, et al. Analysis on Species Distribution and Risk Factors of Nosocomial Invasive *Candida* Infection. China J Leprosy Skin Dis 2000;16(4):211-215
- Yu J**, Li RY, et al. Disseminated Cryptococcosis with Mollusum Contagiosum-like Lesions. China J Leprosy Skin Dis 1999;10(2):115-116

#### Foundations:

National Natrual Science Foundation of China (No: 30600027): oxidative stress related signal factors in pathogenesis of *Candida albicans* infection. 2007. 1~2009. 12.

## 교육 강연 2 (Educational Lecture)

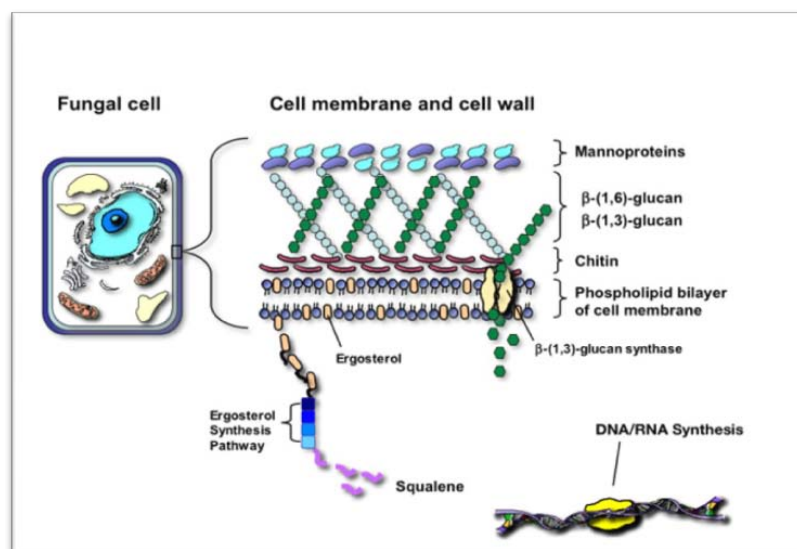
# Immunology of Dermatophytosis

Kwang Ho Kim

*Department of Dermatology, College of Medicine, Hallym University*

### Introduction

Dermatophytes are hyphomycetes that can degrade keratin, so they can cause infections of the keratin-containing superficial skin, which is called 'Tinea'. The pathogenesis and course of tinea is decisively determined by pathogen-related factors and by the defense mechanisms of the host. An infection starts with an adherence of fungal propagules, followed by the formation of hyphae that can spread within the tissue. And then, keratinocytes are activated, the epidermal barrier is destroyed, epidermal proliferation is enhanced and defensins are expressed within the epidermis. In addition, innate and specific immune responses are initiated, involving neutrophilic granulocytes, macrophages, antibodies and T cells. The cellular mechanisms are thought to be crucial for healing. Dermatophytes that penetrate into the dermis can cause granulomatous inflammatory reactions and systemic immune reactions are supposed to be a trigger of so-called id reactions. Understanding the nature and function of the immune response to dermatophytes is an exciting challenge that might lead to novel approaches in the treatment and immunological prophylaxis of dermatophytosis.



\*\* Mannoproteins and  $\beta$ -glucan, components of fungal wall structure, mainly cause immune response of host.

## Immunology of Dermatophytosis

Immunology of Dermatophytosis should be emphasized since there is high incidence of opportunistic fungal infection in patients with defective immunity such as AIDS and transplantation patients. The currently accepted view is that a cell-mediated immune response is responsible for the control of dermatophytosis. Also, susceptibility to chronic dermatophytosis is associated with atopy and with immediate type hypersensitivity

### Innate Immune response

Professional phagocytes, consisting of neutrophils, macrophages, and dendritic cells, have an essential role in the initiation of the specific immune response. Natural killer cells, gamma delta T cells, and nonhematopoietic cells, such as epithelial and endothelial cells, are also important for onsetting the immune response. Innate immunity is instrumental for the development of adaptive cell-mediated immune responses controlling mycotic infections or for disease progression.

#### 1. Keratinocyte

Keratinocytes participate directly in dermatophyte defense and, in addition, activate further cells via released cytokines. Keratinocytes release multiple cytokines in tinea. In addition to interferon- $\gamma$  especially TNF- $\alpha$ , IL-1 $\beta$ , IL-8 and IL-16 appear to be important for the inflammatory tissue reaction. Lesional keratinocytes in tinea express defensins as antimicrobial peptides. By this peptides, the transepidermal water loss is markedly enhanced and expression of Human  $\beta$  Defensin-2 increased in lesional tinea as compared to normal skin.

#### 2. Neutrophils and macrophages

Phagocytosis by neutrophils is the primary mechanism that prevents the establishment of fungal infections, and is usually the most effective. However, cytotoxic activity of neutrophils was transient. To recognize and respond to a fungal pathogen, neutrophils use a number of pathogen recognition receptors, including TLRs and C-type lectin. The cytotoxic effect was mediated by oxidative intermediates derived from the respiratory burst of the phagocytic cells.

#### 3. Complement

Fungi products can activate the alternative pathway of complement without interaction with antibodies (but also, classic pathway).

#### 4. Toll like receptors (TLRs)

Toll-like receptors are a family of pattern recognition receptors that evolved to detect microbial infection. Activation of resident macrophages through TLRs also leads to production of various cytokines (IL-1, IL-6, TNF, etc.) and chemokines (KC-1, MCP-1, etc.), which collectively orchestrate the acute inflammatory response to infection.

## Adaptive immunity - Humoral Immunity

Several studies have shown that humoral immunity to dermatophytes is not protective. However, antibodies are detected in infected patients and animals. The production of antibodies occasionally occurs in complications of dermatophytosis such as vasculitis and urticaria. The possibility that dermatophyte antigens serve as a non-specific adjuvant for the production of IgE antibodies, resulting in allergic disease, in predisposed individuals has been evaluated.

Kaaman et al. showed a higher concentration of IgG antibodies against dermatophyte antigens, measured by ELISA, in infected individuals compared with that found in uninfected controls. High levels of specific IgE and IgG4 were detected in patients with chronic dermatophytosis. On the other hand, Ig levels are low in patients that present a positive delayed type hypersensitivity (DTH) skin test.

## Adaptive immunity - Cellular Immunity

If the pathogen can breach early innate immunity, an adaptive immune response will ensue, with the generation of T cells and B cells. In experimental animal models, athymic (nude) rats that lack T-cell-mediated immunity, could not clear *Trichophyton mentagrophytes* infections compared with genetically matched euthymic control rats. In addition, using sublethally irradiated mice which were particularly susceptible to *Trichophyton* infection, found that regional lymph node cells from syngeneic acutely infected donors conferred protection to irradiated recipients.

### 1. Dendritic cells (DCs)

DCs play a key role in the induction of cell-mediated immunity to intracellular pathogens by triggering the production of IFN- $\gamma$  in NK and T cells. Furthermore, DCs are uniquely adept at decoding the fungus-associated information and translating it into qualitatively different adaptive immune responses of T-cells such as Th1, Th2, Th17 and Treg cells.

### 2. Th17 cell

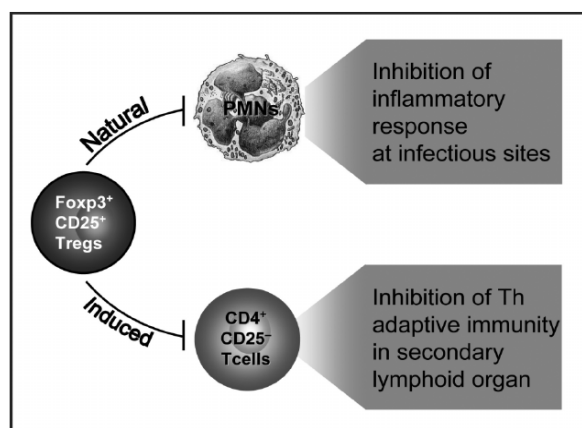
Th17 cells are now thought to be a separate lineage of effector Th cells contributing to immune pathogenesis previously attributed to the Th1 lineage. CD4<sup>+</sup> T cells cultured with TGF- $\beta$  and IL-6 express the transcription factor ROR $\gamma$ t (retinoid-related orphan receptor gamma t) and become Th17 cells that are stabilized by DC-derived IL-23.

Th17 cells promote neutrophil-mediated inflammation. Also, Th17 cells regulate fungal infection by means of IDO inhibition, Th1 inhibition and Treg antagonism.

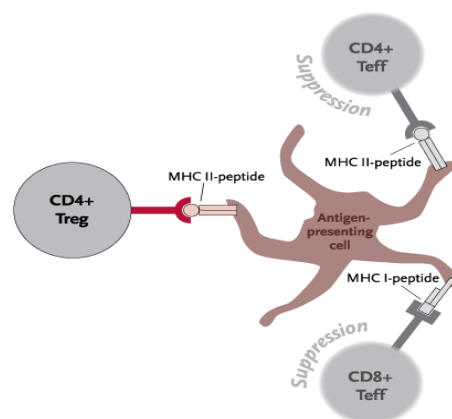
### 3. CD4<sup>+</sup>CD25<sup>+</sup> Treg cells

CD4<sup>+</sup>CD25<sup>+</sup> Treg cells are crucial for controlling the magnitude and duration of immune response to microbes. Expansion of the number or the function of Treg can reduce pathological tissue destruction due to inflammation at the infection site but at the cost of increasing the load of infection and prolonging the pathogen persistence by suppressing protective immune responses. For instance, increased numbers of CD4<sup>+</sup>CD25<sup>+</sup> Treg cells may play

a role in failure of clearance of dermatophytes from skin by preventing the protective inflammation which is leading to development of onychomycosis. As seen in this instance, Treg seems to play a role in the maintenance of chronic infections and persistence of pathogens, consequently enabling the disease reactivation.



Luigina R. Medical Mycology 2008;46:515-529



archives.focus.hms.harvard.edu

### Effect of systemic antifungal treatment on the immune status

According to a research, Effective antimycotic treatment, in particular with terbinafine, was shown to enhance and restore cell-mediated immunity which potentially improves the therapeutic outcome even for a group of patients.

### Conclusion

The definition of the immune mechanisms which govern distinct immune responses against dermatophytes may be pivotal in the understanding of the host determinants of protective immunity. Also, identification of major T-cell epitopes specific to fungal infection will provide an avenue for the design of new treatments.

### Reference

1. Kwon KS, Park HJ, Bong-Seok Jang BS, Kim MB, Oh CK, Jang HS. Immunohistochemical Study of Human  $\beta$  Defensin-2 Expression in Superficial Mycosis. Korean J Dermatol 2006;44:538-544
2. Almeida SR. Immunology of Dermatophytosis. Mycopathologia 2008; 166:277-283
3. Kim SS, Lee HG, Lee CJ. Cutaneous Immune Reactions to Trichophyton in Dermatophytosis. Kor J Med Mycol 2001;6:150-159
4. Kaya TI, Eskandari G, Guvenc U, Gunes G, Tursen U, et al. CD4<sup>+</sup>CD25<sup>+</sup> Treg cells in patients with toenail onychomycosis. Arch Dermatol Res 2009;301:725-729

5. Schmid-Wendtner MH, Korting HC. Effective treatment for dermatophytoses of the foot: effect on restoration of depressed cell-mediated immunity. *J Eur Acad Dermatol Venereol* 2007;21:1013-1018
6. Swan JW, Dahl MV, Coppo PA, Hammerschmidt DE. Complement activation by *Trichophyton rubrum*. *J Invest Dermatol* 1983;80:156-158
7. Dahl MV, Carpenter R. Polymorphonuclear leukocytes, complement, and *Trichophyton rubrum*. *J Invest Dermatol* 1986;86:138-141
8. Kaaman T, von Stedingk LV, von Stedingk M, Wasserman J. ELISA-determined serological reactivity against purified trichophytin in dermatophytosis. *Acta Derm Venereol* 1981;61:313-317
9. Green F, Lee KW, Balish E. Chronic *T. mentagrophytes* dermatophytosis of guinea pig skin grafts on nude mice. *J Invest Dermatol* 1982;79:125-129.



## ● CURRICULUM VITAE ●

NAME : Kwang-Ho Kim, M.D., Ph.D.

ADDRESS: Department of Dermatology, College of Medicine, Hallym University,  
Hallym Univ. Sacred-Heart Hosp. 896 Pyungchon-dong, Anyang-si,  
Gyeonggi-do, Korea, #431-070  
Phone: 82-31-380-3763  
Fax : 82-31-386-3761  
E-mail: dermakkh@yahoo.co.kr

### ◆ ACADEMIC EDUCATION ◆

1991 ~	B.S.; College of Medicine, Hallym University, 1 Okchon-dong, Chuncheon, Gangwon-do 200-702, Korea
2001	M.S.; Department of Dermatology, College of Medicine, Hallym University, Korea
2002	Ph.D.; Department of Physiology, College of Medicine, Korea University, Korea

### ◆ APPOINTMENTS AND PROFESSIONAL ACTIVITIES ◆

1991 ~ 1996	Internship & Dermatology Residency; Hangang Sacred-Heart Hosp., Department of Dermatology, College of Medicine, Hallym University, Korea
1996 ~ 1999	Obligatory Military Service, Department of Dermatology, National Defense Club, Korea
1999 ~ 2010	Clinical Instructor, Assistant Professor and Associate Professor; Hallym Univ. Sacred-Heart Hosp. Department of Dermatology, College of Medicine, Hallym University, Korea
2006 ~ 2007	Visiting Research; Irving Cancer Research center, Department of Dermatology, Columbia University Medical Center, New York
2007 ~ present	Member, Korean Atopic Dermatitis Association
2009 ~ present	Director, Korean Society for Medical Mycology Scientific Secretariat of the Korean Dermatopathology Association
2011 ~ present	Professor; Hallym Univ. Sacred-Heart Hosp. Department of Dermatology, College of Medicine, Hallym University, Korea

◆ SELECTED PUBLICATION ◆

Choi WJ, Kim BC, Park EJ, Cho HJ, **Kim KH**, Kim KJ. Nodular colloid degeneration. Am J Dermatopathol 2011;33:388-391

Park EJ, Youn SH, Cho EB, Lee GS, Hann SK, **Kim KH**, Kim KJ. Xanthelasma palpebrarum treatment with a 1,450-nm-diode laser. Dermatol Surg 2011;37:791-796

Choi WJ, Youn SH, Back JH, Park S, Park EJ, Kim KJ, Park HR, Kim AL, **Kim KH**. The role of KLF4 in UVB-induced murine skin tumor development and its correlation with cyclin D1, p53, and p21 (Waf1/Cip1) in epithelial tumors of the human skin. Arch Dermatol Res 2011;303:191-200

Youn SH, Kwon IH, Park EJ, **Kim KH**, Kim KJ. A Two-week Interval Is Better Than a Three-week Interval for Reducing the Recurrence Rate of Hand-foot Viral Warts after Cryotherapy: A Retrospective Review of 560 Hand-foot Viral Warts Patients. Ann Dermatol 2011;23:53-60

**Kim KH**, Back JH, Zhu Y, Arbesman J, Athar M, Kopelovich L, Kim AL, Bickers DR. Resveratrol targets transforming growth factor- $\beta$ 2 signaling to block UV-induced tumor progression. J Invest Dermatol 2011;131:195-202

Park SBM, Lee YW, Park EJ, Kwon IH, **Kim KH**, Kim KJ. A Case of Tinea Faciei Caused by *Trichophyton mentagrophytes* with Atypical Presentation. Kor J Med Mycol 2010;15:170-174

Park JH, Yoo CS, Kil MS, Kim CW, Kim SS, **Kim KH**. A Case of Chronic Mucocutaneous Candidiasis Occurring in a Patient with Scrofuloderma-like BCGitis. Kor J Med Mycol 2010;15:175-181

Youn SH, Lee YW, Seung NR, Park EJ, Cho HJ, **Kim KH**, Kim KJ. Rapidly progressing malignant melanoma influenced by pregnancy. Int J Dermatol 2010;49:1318-1320

### 교육 강연 3 (Educational Lecture)



#### Case 1. M/55

C/C: "Chronic wound on right leg"

Onset: 10 month-ago

1 yr-ago, heart transplantation  
due to restrictive cardiomyopathy

CsA + MMF + prednisolone

Ulsan (urban area)

10 mon-ago, minor trauma on right leg  
Swelling and discharge wax and wane



## Clinical Principles of Medicine

Feri FF. *Practical Guide to the Care of the Medical Patient*, 4th ed. Mosby. 1998

“ When you hear the hoofbeats think of horses, not zebras. ”



## Chronic, Non-healing Cellulitis

### Unusual bacterial infections

### Non-bacterial infections

Mycobacterial infections

Subcutaneous mycosis

*“granulomatous inflammation”*

### Inflammatory

Neutrophilic dermatosis

Eosinophilic dermatosis

### Malignancy

Carcinoma erysipeloides

Lymphoma / Leukemia



## Unusual Bacterial Infections “less-likely”

*Eikenella corrodens*  
*Pasteurella multocida*  
*Erysipelothrix rhusiopathiae*



NO H/O human, dog and cat bite  
 NOT fish handler  
 Susceptible to ampicillin/sulbactam

*Bacillus anthracis*



NO exposure to cattle ...  
 “Painless papule -> vesiculated”

*Enterobacteriaceae*  
*Pseudomonas aeruginosa*  
*Aeromonas hydrophila*  
*Vibrio vulnificus* ...



NOT “acute course”  
 – “chronic”, “wax and wane”

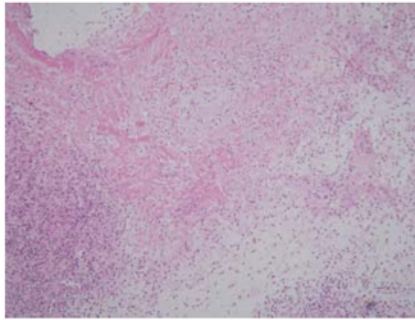
## Non-Bacterial Infections

### Mycobacterial infections

*Mycobacterium leprae* (NO neuropathy)  
*M. tuberculosis*  
 Non-tuberculous mycobacterium (NTM)  
*M. marinum* (NO exposure to fish tank)  
*M. ulcerans* (Tropical, Buruli ulcer)  
 Rapid-growing NTM  
*M. fortuitum* / *M. chelonae* / *M. abscessus*  
 (NO exposure to contaminated needle)

### Fungal infections (Subcutaneous mycosis)

## Case 1. M/55



### < Skin Biopsy and Pathology >

Focal necrosis  
with inflamed granulation tissue.  
NTM PCR+

특수	코드	Description	결과값
N	L411701	NTM drug sensitivity	균주번호: 40485
N	L411702	Isolate Work number	20080800-L41AA-I-1187
N	L411703	Species identification	M. kansasii



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Cutaneous NTM Infections

Table 1. Nontuberculous mycobacteria: cases studied

	Immunosuppressed	Normal hosts
Total biopsies	10	18
Rapid growers	5 (50%)	2 (12%)
<i>M. chelonae</i>	4 (Renal T.[C, Az, CsA])	2
<i>M. abscessus</i>	1 (Asthma [C])	0
Slow growers	5 (50%)	16 (88%)
<i>M. marinum</i>	1 (SLE [C, Cph.])	14
<i>M. kansasii</i>	2 (AIDS)	0
<i>M. avium</i> complex	1 (AIDS)	0
<i>M. gordonae</i>	0	1
<i>M. terrae</i>	0	1
<i>M. simiae</i>	1 (AIDS)	0

*J Cutan Pathol* 2000;27:124-9



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE



## *M. kansasii* Cutaneous Infections

Slow-growing photochromogen

Primarily affects lung tissue

Cattle, swine, tap water

It can stay in water for as long as 12 months, grows at 37°C

Cutaneous lesions

- papules and pustules

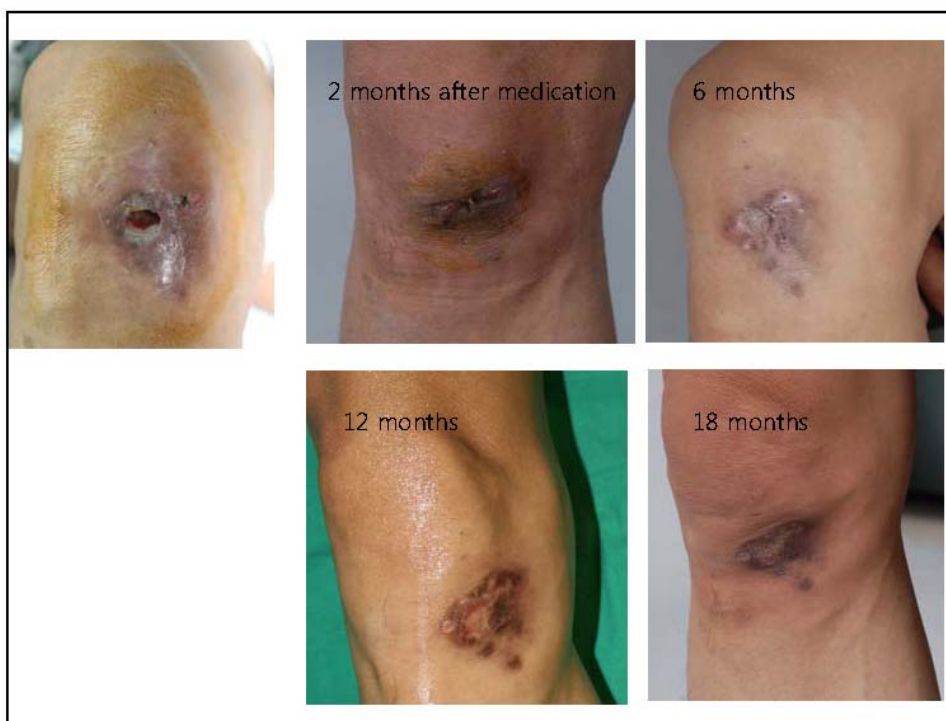
- verrucous or granulomatous plaques or nodules

- may ulcerate

Pathology: identical to tuberculosis

Should be confirmed by isolation and identification

**Treatment:** INH, RFP, EMB ± SM / Surgical debridement (if, possible)



## Case 2. F/24

C/C: "Painful swelling on Lt. calf"

Onset: 2 weeks-ago

8 yr-ago, KT

Sarcoidosis history (+)

CsA + MMF + prednisolone

Seoul

2 wk-ago, painful swelling on Lt. calf



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

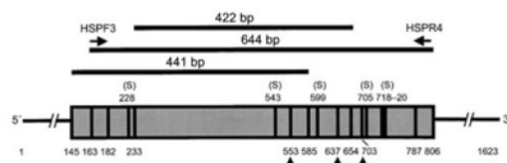
## Case 2. F/24

AFB 4+ / TB-PCR (-)  
Ogawa egg medium (-)  
Aggravation despite surgical  
debridement and HREZ

Chocolate agar at 30°C  
rough, non-pigment colony  
PCR-RFLP: *M. haemophilum*  
RFP / Cipro / Clarithromycin  
Surgical debridement 4 times

Differentiation of *Mycobacterium* species by  
analysis of the heat-shock protein 65 gene (*hsp65*)

*International Journal of Systematic and Evolutionary Microbiology* (2005), 55, 1649–1656



PCR-mediated sequencing  
using smear (+) pus  
Similarity > 99% with  
*M. haemophilum*



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE



## *M. haemophilum* Infections

Slow-growing

Requires hemin for growth (hence its name)

Growth at cooler temperature (30~32°C)

Cutaneous lesions, tenosynovitis, arthritis, osteomyelitis, pneumonitis ...

Pyomyositis: 2 cases in the literature including this case

Pyomyositis due to other NTM: 2 cases of *M. avium* complex

**Treatment:** FQ, Clarithromycin, RFP / Surgical debridement

## *M. tuberculosis* Infections after KT



45 days after HREZ



### Case 3. M/51

C/C: "Multiple nodules on Lt. knee"

Onset: 3 month-ago

1 yr-ago, LDKT

Tac + AZA + prednisolone

Kwang-Ju (urban area)

Business man (construction)

Trauma history (-)

DM for 20 years

Serum Cr 1.2 mg/dL

CBC 7,100 – 14.6 – 168K



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

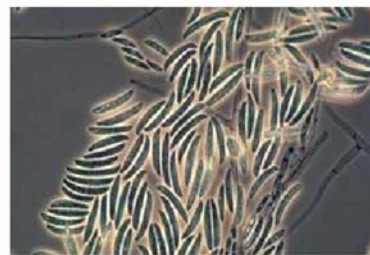
### Case 3. M/51

특수	코드	Description	결과값
N	L422103	Open pus, Fungus culture	결과참조
N	BFUSAR	Fusarium spp.	Many

특수	코드	Description	결과값
N	L422144	Skin, Fungus culture	결과참조
N	BFUSAR	Fusarium spp.	Many



*Fusarium solani* colony



Banana-shaped macroconidia  
Clinical Mycology. 2<sup>nd</sup> Eds.



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Fungal Infections in SOT Recipients

### Yeast

*Candida* spp.

*Cryptococcus neoformans*

Others: *Trichosporon*, *Malassezia*, *Rhodotorula*

### Molds

*Aspergillus* spp.

Other than *Aspergillus* spp.

- Zygomycetes

- Hyalohyphomycetes (hyaline, colorless septate hyphae)

*Fusarium*, *Scedosporium*, *Penicillium*, *Acremonium*

- Phaeohyphomycetes (pigmented septate hyphae)

*Alternaria*, *Exophiala*, *Dactylaria*, *Cladophialophora*, *Curvularia*



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Fusariosis

Common soil saprophytes

*F. solani*: most common

Localized infection: by trauma

Disseminated infection: severe, prolonged neutropenia

Propensity to blood vessel

**Treatment:** Amphotericin B, Voriconazole + surgical debridement  
+ reduction of immunosuppressive agents

Drug/N	AMB/29	ITRA/17	VORI/27
MIC Range	1.0-16	>3.0	2.0->8.0
MIC <sub>50</sub>	2 C	>3.0	8.0
MIC <sub>90</sub>	4 C	>3.0	>8.0

\* Fungus Testing Laboratory unpublished data (NCCLS M38-A)

[www.doctorfungus.org](http://www.doctorfungus.org)



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Fusariosis after SOT

Reference, year	Type of transplant	Age, sex	Immuno-suppressive agent	Type of infection (time of onset)	Treatment	Outcome of infection (patient outcome)
[16], 1996	K	48 y, M	Cysp, Prd	Localized heel ulcer (21 wk after transplantation)	Amputation below the knee	Resolved (survived)
[17], 1979	K	30 y, F	Unknown	Localized, cutaneous (5 y after transplantation)	Surgical excision	Resolved (survived)
[19], 1998	DL	18 y, F	Cysp, Aza, Prd	Disseminated, tricuspid valve endocarditis (2 wk after transplantation)	AmB	Fungemia cleared (died of bacterial sepsis)
[20], 1997	DL	53 y, M	Cysp, Aza, Prd	Multiple lung abscesses in native lung (12 wk after transplantation)	AmB lipid complex (Abelcet), 12.6 g	Resolved
[21], 1999	K	50 y, M	Cysp, Aza	Localized abscess on dorsum of foot (2 y after transplantation)	Surgical debridement, lipid formulation of amphotericin B (AmBisome), 7.5 g	Persistent infection (died of cardiac arrhythmia) <sup>a</sup>
Present study, 1998	H, L	45 y, M	Cysp, Aza, Prd	Localized, cutaneous nodules (1 y after transplantation)	AmB lipid complex (Abelcet), 10 g, and topical amphotericin (Fungizone 3% cream; Apothecon)	Resolved

**NOTE.** AmB, amphotericin B; Aza, azathioprine; Cysp, cyclosporine; DL, double lung; F, female; H, heart; K, kidney; L, liver; M, male; Prd, prednisone.  
<sup>a</sup> No dissemination of infection was seen at the time of postmortem examination.

*Clin Infect Dis* 2001;32:1237-40



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Fusariosis after SOT

**Table 2. Characteristics of *Fusarium* infection in bone marrow transplant (BMT) and solid-organ transplant (SOT) recipients.**

Finding	BMT recipients	SOT recipients
Type of infection	Disseminated	Localized
Fungemia incidence	20%–60%	Uncommon
Time of onset of infection	Early PT period	>9 mo PT
Mortality rate	70%–100%	33%

**NOTE.** PT, posttransplantation.

*Clin Infect Dis* 2001;32:1237-40

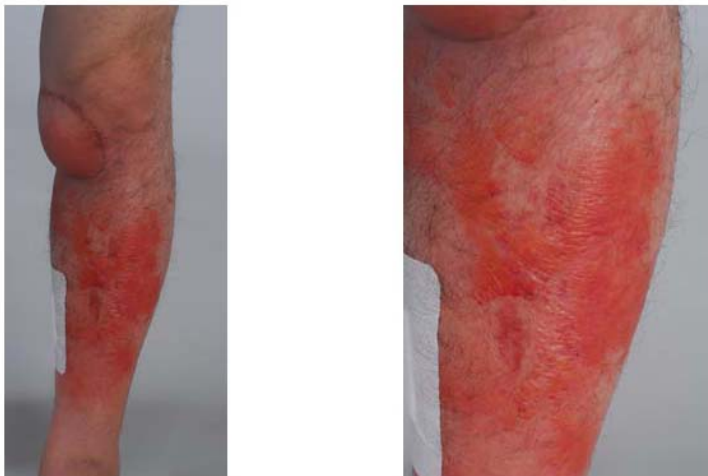


UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

### Case 3. M/51



### Case 3. Cellulitis after several months



## Case 4. M/34

**C/C: "Nodules on Rt. Knee and hand"**

**Onset: 4 month-ago**

7 mon-ago, HT due to DCMP

Schizophrenia

CsA + MMF + prednisolone

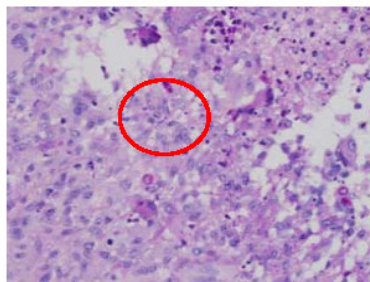
Hadong (urban area)

4 mon-ago, minor trauma on Rt. knee



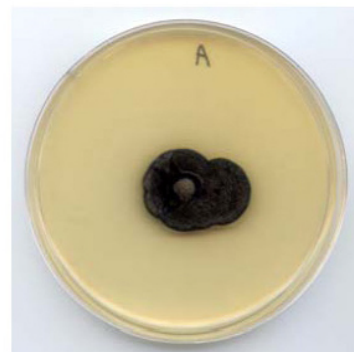
UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Case 4. M/34



### < Skin Biopsy and Pathology >

Suppurative and granulomatous  
Inflammation with fungi



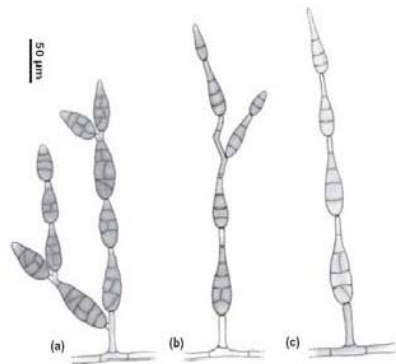
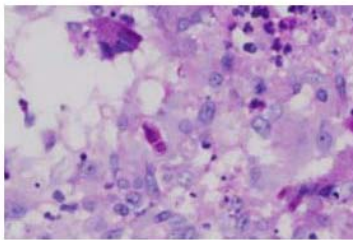
특수	코드	Description
N	L422138	Biopsy tissue, Fungus culture
N	BALTER	Alternaria species



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE



## *Alternaria* species



## Alternariosis

Phaeohyphomycetes: pigmented septate hyphae (dark gray colonies)

Dermaticeous fungi

Cutaneous infections most in lower extremities

Often multiple

Skin trauma, DM

**Treatment:** excision whenever feasible

+ reduction of immunosuppressive agents

+ voriconazole, itraconazole, amphotericin B, caspofungin...

## Phaeohyphomycosis due to *Alternaria* species in transplant recipients

Mayo clinic, 1989~2008, 8406 SOT

8 confirmed cases of alternariosis (0.095%)

- all SOT
- median age: 48 year-old (36~63 year-old)
- median time after SOT: 344 days (0~1081 days)
- all cutaneous infections (8/8): solitary 3 / multiple 5  
mainly exposed areas of L/E (6/8) and U/E (4/8)

Treatment: antifungal therapy for 232 days (20~ 696 days)

itraconazole (5), voriconazole (2), caspofungin (1)

+ reduction of immunosuppressive agents: eventually all

+ surgical excision: eventually all

*Transplant Infect Dis* 2010;12:242-50

### Case 4. M/34



Itraconazole for 8 months



## Fungal Infections in SOT Recipients

### Yeast

*Candida* spp.

*Cryptococcus neoformans*

Others: *Trichosporon*, *Malassezia*, *Rhodotorula*

### Molds

*Aspergillus* spp.

Other than *Aspergillus* spp.

#### - Zygomycetes

- Hyalohyphomycetes (hyaline, colorless septate hyphae)

*Fusarium*, *Scedosporium*, *Penicillium*, *Acremonium*

- Phaeohyphomycetes (pigmented septate hyphae)

*Alternaria*, *Exophiala*, *Dactylaria*, *Cladophialophora*, *Curvularia*



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

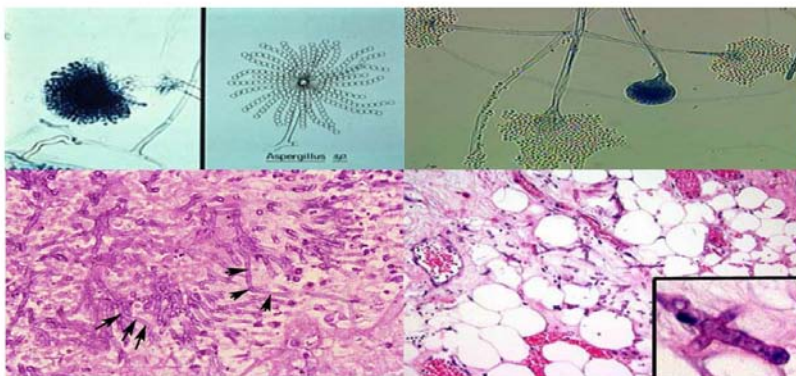
## Systemic Mycoses, "Mold"

### ❖ *Aspergillus*

septate, branch; 45°

### ❖ *Mucor*

non-septate, wide-angle



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Mucormycosis

A 45-year-old woman with poorly controlled insulin-dependent diabetes mellitus had facial and peri-orbital swelling for three to four days.



## Mucormycosis

### Zygomycetes (Class)

### Mucorales (Order)

Family	Genus	Species
Mucoraceae	<i>Absidia</i>	<i>A. corymbifera</i>
	<i>Apophysomyces</i>	<i>A. elegans</i>
	<i>Mucor</i>	<i>M. circinelloides</i>
		<i>M. hiemalis</i>
		<i>M. racemosus</i>
		<i>M. ramosissimus</i>
		<i>M. rouxianus</i>
		<i>Rhizopus</i>
	<i>Rhizopus</i>	<i>R. pusillus</i>
		<i>R. arrhizus</i>
		<i>R. azygosporus</i>
Cunninghamellaceae	<i>Cunninghamella</i>	<i>C. bertholletiae</i>
Mortierellaceae	<i>Mortierella</i>	
Saksenaceae	<i>Saksenaea</i>	<i>S. vasiformis</i>
Syncephalastraceae	<i>Syncephalastrum</i>	<i>S. racemosum</i>
Thamnidaceae	<i>Cokeromyces</i>	<i>C. recurvatus</i>

- ❖ poor prognosis
- ❖ immunocompromised
- ❖ correction of DKA
- ❖ surgical resection with antifungal agents
- ❖ high-dose amphotericin B toxicity
- variable in-vitro activity

## Liposomal Amphotericin B for Mucormycosis

### **Rhinocerebral mucormycosis treated with 32 gram liposomal amphotericin B and incomplete surgery: a case report**

*BMC Infectious Diseases* 2001, **1**:22

Surgery and Treatment with High-Dose Liposomal Amphotericin B for Eradication of Craniofacial Zygomycosis in a Patient with Hodgkin's Disease Who Had Undergone Allogeneic Hematopoietic Stem Cell Transplantation

*JOURNAL OF CLINICAL MICROBIOLOGY*, Apr. 2005, p. 2012-2014



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Newer Agents for Mucormycosis

### Caspofungin

poor in-vitro activity

### Voriconazole

poor in-vitro activity

### " Posaconazole "

good in-vitro activity

#### LETTERS TO THE EDITOR

Pulmonary Mucormycosis (Zygomycosis) in a Lung Transplant Recipient: Recovery after Posaconazole Therapy

*Transplantation* • Volume 80, Number 4, August 27, 2005

#### BRIEF REPORT

Successful Treatment of Pulmonary Zygomycosis With Posaconazole in a Recipient of a Haploidentical Donor Stem Cell Transplant

*Pediatr Blood Cancer* 2006;47:959-963

#### Posaconazole as Salvage Therapy for Zygomycosis

*AAC* 2006;50:126-33

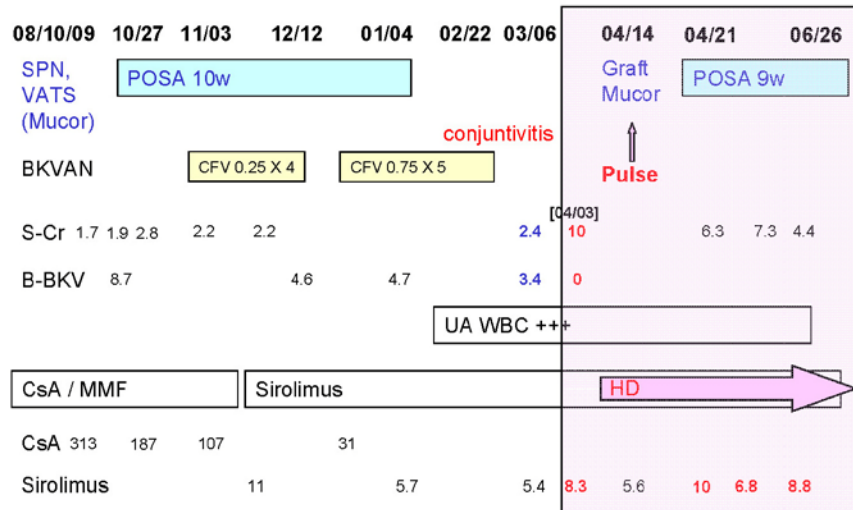
Open, non-random, multicenter trial (24 patients)

Success 79% in refractory, 80% in intolerance



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## KYS (F/41), 2008/07/12 LRKT



## Cunninghamella in Urine Culture



## Case 5. M/72

**C/C: "Masses on leg and thigh"**

**Onset: 3 weeks ago**

12 yr-ago, LRKT

CsA + prednisolone

Farmer

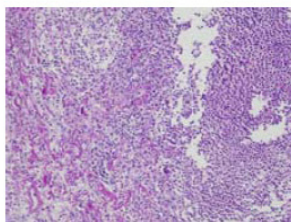
Serum Cr 1.1 mg/dL

CBC 16,000 – 9.5 – 174K

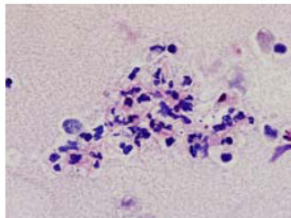


UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Case 5. M/72



Granuloma Modified AFB



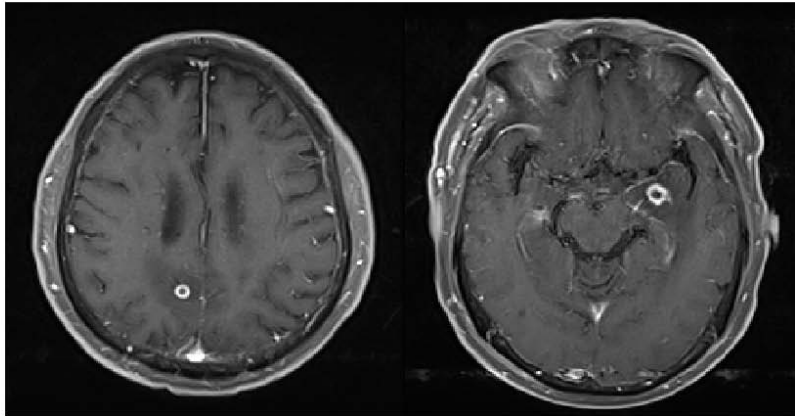
Biopsy tissue, Gram stain	Direct smear
- W.B.C	Rare < 1/LPF
- Bacteria	No organisms seen
Biopsy tissue, Culture	최종보고
<i>Nocardia</i> spp.	Rare
-Clarithromycin	R
-SXT	S
-Amoxicillin/clavulonate	R
-Minocycline	S
-Amikacin	S
-Ceftriaxone	S
-Imipenem	S
-Ciprofloxacin	S



UNIVERSITY OF ULSAN  
COLLEGE OF MEDICINE

## Case 5. M/72

### Brain MRI



## Nocardiosis

Ubiquitous in soil

Skin infection and mycetoma

- after inoculation injury
- suppurative granuloma, progressive fibrosis and necrosis, and sinus formation

Disseminated disease: CND, retina, lung, heart, kidney, joint, bone, skin ...

Skin trauma, DM

### Treatment:

- combination iv therapy for 3~6 wks  
(TMP/SMX, ceftriaxone, amikacin, imipenem, linezolid)
- switch to 2 po drugs (TMP/SMX, minocycline, AM/CL)  
for at least 1 yr (immunocompromised)



## Chronic, Non-healing Cellulitis

### Unusual bacterial infections

### Non-bacterial infections

Mycobacterial infections

Subcutaneous mycosis

*"granulomatous inflammation"*

### Inflammatory

Neutrophilic dermatosis

Eosinophilic dermatosis

### Malignancy

Carcinoma erysipeloides

Lymphoma / Leukemia



## Inflammatory

### Neutrophilic dermatosis

**Pyoderma gangrenosa** (Inflammatory bowel disease, collagen vascular, malignancy)

**Sweet's syndrome** (Inflammatory bowel disease, malignancy, medication)



Sweet's synd.

Hb 6 - MDS



### Eosinophilic dermatosis

**Wells' syndrome** (malignancy, medication) "peripheral eosinophilia"

## Summary

### Skin and soft tissue infection after transplantation

*M. tuberculosis*, NTM, Fungus, Nocardia ...

SOT >> BMT, maybe ...

You cannot tell one from another by inspection

Needs biopsy and culture for correct diagnosis and treatment

Molecular study for identification, promising

The role of newer antifungal agents should be determined

Consider surgical excision





## ● 연자 소개 ●

성 명 : 이 상 오

1994년 2월	한양대학교 의과대학 졸업
1995년 2월	서울아산병원 인턴 수료
1999년 2월	서울아산병원 내과 전공의 수료
2002년 5월 ~ 2003년 2월	서울아산병원 감염내과 임상강사
2003년 3월 ~ 2004년 8월	가천의과대학교 길병원 감염내과 조교수
2004년 9월 ~ 2007년 2월	경희대학교 의과대학 감염내과 조교수
2007년 3월 ~ 현재	울산대학교 의과대학 감염내과 부교수
2010년 3월 ~ 2011년 6월	Mayo Clinic, Visiting Scientist

# MEMO

## 수혜자 보고 (Beneficiary Report)

수혜자 보고 1

Soyun Cho

수혜자 보고 2

Mi-Woo Lee



## 수혜자 보고 1 (Beneficiary Report)

### Histopathologic Findings of Tinea Corporis

Soyun Cho, MD, PhD

*Department of Dermatology, Seoul National University College of Medicine*

Dermatophytosis is not always easy to diagnose because KOH and culture results are not always positive and clinical lesions may mimic various other dermatoses. Histopathologic findings of 16 cases of dermatophytosis other than tinea pedis or onychomycosis, whose diagnosis was confirmed through PAS stain, were analyzed retrospectively for histologic 'clues' to the diagnosis.

Patients' ages ranged from 7 to 63 years (mean, 37.9), and male-to-female ratio was 1:1.7 (6 males and 10 females). Most common initial clinical impression was contact dermatitis, followed by atopic dermatitis, seborrheic dermatitis, herpes simplex infection, subcorneal pustular dermatosis, psoriasis, granuloma annulare, folliculitis and Hailey-Hailey disease. In 3 cases (19%) skin lesions appeared after trauma, and in 2 cases (13%) contact with animals was noted before lesion development. Among 7 cases where fungal culture was concurrently ordered, *Trichophyton rubrum* was cultured in 3 cases. Among the skin samples, the most frequent histopathologic finding was variable host inflammatory response, occurring in 100% of the samples, followed by basket weave keratin layer or parakeratosis (69% each), neutrophils in stratum malpighii (56%), spongiotic changes (44%), papillary dermal edema (38%), neutrophils in stratum corneum, compact orthokeratosis, sandwich sign, and hemorrhage (25% each), interface and/or lichenoid changes, subcorneal pustules, folliculitis and/or folliculocentric inflammation, dermal fibrosis (19% each), and psoriasiform changes (13%). Folliculocentric inflammation was seen exclusively in facial lesions. In many cases, fungal hyphae were only scarcely present. In 2 facial lesions, PAS-(+) hyphae were seen only in hair follicles.

This case series study demonstrates that dermatophytosis should be strongly considered in the differential diagnosis of lesions with nonspecific upper dermal inflammation, neutrophils in the epidermis, and papillary dermal edema.

## ● CURRICULUM VITAE ●

### ◆ PERSONAL INFORMATION ◆

Name : Soyun Cho  
Birthday : Aug. 28, 1968  
Nationality : South Korea  
Current position : Associate Professor  
Organization : Seoul National University College of Medicine  
Address : Department of Dermatology, 41 Boramae-gil, Dongjak-gu, Seoul, 156-707 Korea

### ◆ Education ◆

1987 ~ 1993 Ewha Womans University College of Medicine, Seoul, Korea (M.D.)  
1995 ~ 1997 Ewha Womans University College of Medicine, Seoul, Korea (M.S.)  
1997 ~ 2000 Ewha Womans University College of Medicine, Seoul, Korea (Ph.D.)

### ◆ Post-graduate training ◆

1993 ~ 1994 Rotating internship, Ewha Womans University Medical Center, Seoul, Korea  
1994 ~ 1998 Dermatology residency, Ewha Womans University Medical Center, Seoul, Korea

### ◆ Teaching appointment & Experiences ◆

1998 ~ 2000 Fellow, Dermatology, Ewha Womans University Dongdaemun Hospital, Seoul, Korea  
2000 ~ 2001 Fellow, Dermatology, Asan Medical Center, University of Ulsan, Seoul, Korea  
2001 ~ 2002 Clinical research fellow, Dept. of Dermatology, University of Michigan, MI, USA  
2002 ~ 2003 Lecturer, Dept. of Dermatology, University of Michigan, MI, USA  
2003 ~ 2005 Assistant Professor, Department of Dermatology, Inje University Seoul Paik Hospital  
2005 ~ 2009 Assistant Professor, Department of Dermatology, Seoul National University College of Medicine, Head of Dermatology, Boramae Hospital  
2009 ~ present Associate Professor, Department of Dermatology, Seoul National University College of Medicine, Head of Dermatology, Boramae Hospital

### ◆ Major Interest ◆

Skin aging & photoaging, matrix biology, retinoids, mycology, acne, dermatopathology

## 수혜자 보고 2 (Beneficiary Report)

### Clinical Analysis of Deep Cutaneous Mycoses: A 12-year Experience at a Single Institution in Korea

**Mi-Woo Lee and Myoung-Shin Kim**

*Department of Dermatology, Asan Medical Center, College of Medicine,  
University of Ulsan, Seoul, Korea*

Deep cutaneous mycoses may cause significant morbidity and mortality, especially in immunocompromised host. There were only a small number of studies focusing on deep cutaneous mycoses and no data exist from Asian countries. This study aimed to investigate clinical characteristics, underlying predisposing factors, etiologic organisms and outcomes of our patients with deep cutaneous mycoses. A retrospective medical record review was conducted of the patients with deep cutaneous mycoses treated at our institution from 1998 to 2010. Fungal organisms were confirmed both culture and histopathology of skin specimen.

41 cases of deep cutaneous mycoses were identified. Most of patients (32/41) had underlying immunosuppressive medical conditions, and seven of the other nine patients had obvious physical trauma history. Nodular skin lesions were most frequently found (19/41) and the morphology of the lesion was varied. *Candida* (16/41) was the most common organism, followed by *Aspergillus*, *Alternaria*, *Fusarium* (4/41, respectively) and others.

Dermatologists should be familiar with the clinical appearance of skin lesions of deep cutaneous mycoses, which may be lethal with delayed treatment. Because of lack of specific diagnostic tool and highly polymorphous appearance, suspicion and early skin biopsy are the most important steps for prompt diagnosis and treatment.

## ● CURRICULUM VITAE ●

Mi Woo Lee, MD

Associate Professor, Department of Dermatology

Asan Medical Center, College of Medicine University of Ulsan, Seoul, Korea

### ◆ EDUCATION ◆

1989	Seoul National University, School of Medicine, Seoul, Korea (M.D.)
1994. 2	Seoul National University, School of Medicine, Seoul, Korea (M.S.)
2000. 2	College of Medicine University of Ulsan, Seoul, Korea (PhD.)

### ◆ EXPERIENCE ◆

1990 ~ 1994	Resident in Dermatology, Asan Medical Center, Seoul
1994 ~ 1998	Private Clinic
1998 ~ 2000	Fellow in Dermatology, Asan Medical Center, Seoul
2000 ~ 2001	Post-doctor scholarship in Dermatopathology, University of California, San Francisco
2001 ~ 2002	Fellow in Dermatology, Asan Medical Center, Seoul
2004 ~ 2005	Researcher in Dermatology, University of California, Los Angeles
2002 ~ 2006	Assistant Professor, Department of Dermatology, Asan Medical Center, College of Medicine University of Ulsan, Seoul
2006 ~	Associate Professor, Department of Dermatology, Asan Medical Center, College of Medicine University of Ulsan, Seoul



**구연 연제 초록 (Free Communication)**  
**[FC-1 ~ FC-7]**



## FC-1 Comparison of Therapeutic Efficacy on Various Clinical Type of Distal Lateral Subungual Onychomycosis

가톨릭대학교 의과대학 성모병원 피부과학교실

방철환 · 이영복 · 박현정 · 조백기

### Background

Onychomycosis is a common fungal infection accounting for 50% of all nail disorders. Above all the clinical type of onychomycosis, distal lateral subungual onychomycosis (DLSO) is the most common clinical type seen up to 70~90% in onychomycosis patients. In our clinical experience, the cure rate and recurrence rate of DLSO are different according to the clinical type of DLSO.

### Objectives

It is hypothesized that lateral DLSO is more difficult to cure than other type of DLSO.

### Methods

To investigate the difference of the cure rate, we reviewed 81 DLSO cases who visited our clinic from 2006. 6. 1 to 2010. 6. 31, and classified them into 4 groups; edge type, distal type, lateral type and linear type. We treated the patients with PO antifungal agent for 4 months, and followed them up in 2 months. Scoring clinical index for onychomycosis (SCIO) was checked and photography was taken before treatment and after treatment.

### Results

1. There are no significant differences in average age and male to female ratio between lateral DLSO and non-lateral DLSO.
2. The history of recurrence Lateral DLSO is higher than that of non-lateral DLSO. However, there are no significant static differences.
3. The comparison of SCIO score distribution before treatment between lateral DLSO and non-lateral DLSO, there was no significant statistic difference. However, there was significant change in SCIO score distribution after the treatment.
4. SCIO change in lateral DLSO was 6.99, while non-lateral DLSO was 11.1. ( $p=0.018$ )
5. There was 2cases of worsen case in lateral DLSO, while there was no worsen case in non-lateral DLSO. ( $p=0.019$ )

### Conclusion

Lateral DLSO is more difficult treat than non-lateral DLSO. SCIO score is reliable index to use in clinical study of onychomycosis.

FC-2

## Diagnosis of Onychomycosis : Is it Possible to Establish the Diagnosis of Onychomycosis with Clinical Characteristics?

성균관대학교 의과대학 삼성서울병원

박지혜 · 정미영 · 이동윤

Onychomycosis is the most general nail disease and one of the most prevalent problems for visiting dermatologic outpatient clinic. It is caused by dermatophytes, yeasts and nondermatophytic molds, and among these fungi, *Trichophyton rubrum* is known as the most common pathogen of onychomycosis. As the increasing elderly population, the prevalence of onychomycosis has increased. Also, if onychomycosis is left untreated for a long time, it can be a source of other infections such as cellulitis. Thus, it is very important to make an accurate diagnosis as soon as possible for starting proper treatments.

For diagnosis of onychomycosis, laboratory tests are used such as direct smear examination, fungus culture and histopathology by PAS (Periodic acid-Schiff) staining. But, there is no gold standard. The most commonly used standard is a combination of laboratory tests. However, the laboratory tests are time-consuming and pricey. Accordingly it can takes time for diagnosis and make delay for treatment.

The purpose of this study is to identify the value of clinical diagnosis for onychomycosis. In order to clarify the possible role of clinical diagnosis, we reviewed 114 patients with toenail abnormalities retrospectively. We confirmed the presence of fungi on culture or a positive PAS staining of nail plate. All patients were investigated for clinical characteristics such as an area of involved nail plate, the presence of tinea pedis, the involvement of finger nails, color of involved nail plate, the pattern of nail dystrophy, number of affected nails and histopathological pattern of PAS staining.

## FC-3 한 가족 내에서 애완 고양이로부터 발생한 것으로 추정되는 농창상 *M. canis* 감염증

계명대학교 의과대학 피부과학교실

윤상돈 · 류한원 · 조재위 · 이규석

*Microsporum canis*는 두부백선의 가장 흔한 원인균으로, 드물게 안면백선, 체부백선을 일으키기도 하며, 주된 감염원은 애완용 고양이로 알려져 있다. 일반적으로 *M. canis*에 의한 두부백선은 회색의 인설반 또는 염증성의 융합성 모낭염 병변으로 나타나는 반면 체부백선은 경계가 명확하고 홍반성의 인설성 구진의 형태로 나타나며, 그 크기가 비교적 일정하며 다발성으로 발생하는 특징이 있어서 구분된다. 본 증례는 가피로 덮인 홍반성 구진과 반이 안면 및 체간에 발생하여 내원한 환자로 처음에는 농가진과 같은 세균감염을 의심하였으나, 체간의 인설성 병변에서 시행한 KOH 검사에서 균사를 확인하였고, 진균배양을 시행하여 *M. canis*에 의한 체부백선을 진단하였다. 또한 함께 거주하는 딸에서 이와 유사한 경계가 명확한 홍반성 인설성 구진이 발생하여 진균학적 검사를 통해 *M. canis*에 의한 체부백선을 진단하였다. 본 증례는 한 가족 내에서 발생한 애완용으로 키우던 고양이로부터 감염된 것으로 추정되는 농창상 *M. canis* 감염증으로 그 임상양상에 있어 교육적인 증례라 생각하여 보고하는 바이다.

## FC-4 *Paecilomyces lilacinus*에 의한 국소 피부감염증

전북대학교 의학전문대학원 피부과학교실

조용선 · 황수란 · 송기훈 · 이종선 · 박 진 · 윤석권 · 김한욱

*Paecilomyces lilacinus*는 토양에 존재하는 부패균 (saprophyte)으로 인체감염은 드물지만 면역 능력이 감소할 경우 감염을 일으킬 수 있으며, 또한 특별한 유발요인 없이 정상인에서도 감염을 일으킬 수 있다. 본 군에 의한 피부감염증은 국내 피부과 문헌 및 대한의진균학회지 검색 상 현재까지 3예만이 보고되어 있다.

81세 남자 환자가 내원 3개월 전부터 발생한 왼쪽 손등의 인설이 있는 붉은 판과 농포를 주소로 내원하였다. 과거력상 환자는 면역 능력의 감소를 일으킬만한 위험인자는 없었다. 피부병변에서 시행한 KOH 검사 상 균을 발견할 수는 없었으나, 병리조직학적 검사에서는 H&E 염색에서 만성 육아종 소견이 관찰되었고, PAS 염색에서 균요소가 관찰되었다. 병변의 생검조직 일부를 Sabouraud 배지에 접종하여 배양을 시행하였는데 배양 15일째에는 흰색의 가장자리를 가지며 중심부가 연분홍색인 균집락이 관찰되었으며, 계대배양 시 비슷한 소견을 보였다. 본 집락에서 시행한 슬라이드 배양표본의 Lactophenol-cotton blue 염색에서는 *Paecilomyces* 속 (genus)에 해당하는 소견을 보였으며, DNA 염기서열결정 (sequencing) 검사 결과 *Paecilomyces lilacinus*로 동정되었다. 경구 itraconazole을 1일 200 mg 2주간 투여하여 피부병변은 일부 호전되었으나, 이후 환자가 내원하지 않아 추적 관찰은 중단되었다.

저자들은 81세 남자 환자에서 발생한 *Paecilomyces lilacinus*에 의한 국소 피부감염증을 경험하고 이를 보고한다.

동국대학교 의과대학 피부과학교실, 진단검사의학교실<sup>1</sup>

서문균 · 김동민 · 이명훈 · 하경임<sup>1</sup>

*Chaetomium*(C.) 균종은 토양과 나무 부스러기에 존재하는 부패성 자낭균류 (ascomycetes)인 흑색 진균으로, 인체감염은 *C. globosum*, *C. atrobrunneum*, *C. strumarium*, *C. perlucidum*, *C. funicolum*과 연관되어 있다. 이 균종은 주로 면역결핍환자에서 피하 흑색진균증 (phaeohyphomycosis) 및 전신감염을 일으키는 것으로 보고되었으며, 건강인에서는 손발톱진균증을 일으킨다. 현재까지 *C. globosum*에 의한 손발톱진균증의 보고는 5예 정도로 드물다.

환자는 35세 남자로 약 2년 전부터 우측 첫 번째, 다섯 번째, 및 좌측 첫 번째, 네 번째 발톱끝이 황갈색으로 변색되었고, 발톱밑 과각화증이 동반되었다. 과거력 및 가족력상 특이사항은 없었고, 이학적 소견은 발톱 소견 이외 전신상태는 비교적 양호하였다. 검사실 소견은 모두 정상범위내지 음성 소견을 보였으며, 병변부 발톱 KOH 검사에서 소수의 분절된 균사를 보였고, 2개의 사부로 사면배지에 접종하여 25℃에서 1주간 배양한 결과 빠르게 성장하며, 처음에는 흰색용모를 띄다가 회갈색으로 변하고, 배지의 뒷면은 오렌지 갈색의 착색을 보이는 다수의 동일한 균집락이 관찰되었다. 평판배지에 계대배양 하였을 때도 동일한 소견을 보이고, 반복배양시에도 모두 동일한 결과를 보였다. Lactophenol cotton blue로 염색하여 시행한 현미경 관찰 상 갈색의 분절된 균사, 피자기 (perithecia) 및 자낭포자 (ascospores)가 보였고, 피자기는 크고, 흑갈색의 플라스크 형태를 보이며, 표면에는 머리카락 같이 분지되지 않은 실들이 붙어 있었다. 또한 피자기는 열려있는 구멍 (ostioles)을 지니고, 내부에는 자낭 (asci)과 자낭포자를 지니고 있었으며, 자낭포자는 갈색의 레몬모양의 단세포 형태를 보였다. 균집락으로부터 DNA를 분리하여 진균핵 내의 ITS 부위의 염기서열을 얻은 후 *C. globosum* strain ATCC 6205의 ITS 부위의 염기서열과 비교한 결과 100% 일치하였다. 이상의 KOH 소견, 진균 배양, 광학 현미경 소견, 그리고 ITS 부위의 염기서열 분석으로 *C. globosum*으로 동정하였다. 치료로는 3개월간 terbinafine 1일 250 mg 경구투여와 amorolfine 5% nail lacquer를 도포하였다.

## FC-6      A Case of Mucocutaneous Candidiasis Mimicking Lichen Planus

**Byong Han Song, Eun Joo Park, In Ho Kwon, Kwang Ho Kim, Kwang Joong Kim**

*Department of Dermatology, College of Medicine Hallym University Sacred Heart Hospital,  
Anyang, Korea*

Infection with the yeast candida is a quite common disease. Its occurrence might be harmless, however, *Candida* infections often present with an underlying systemic disease. Thus, candidiasis in some cases can be considered as an indicator for diabetes mellitus or immune deficiency (i.e. HIV or leukemia). Several clinical forms of mucocutaneous candidiasis are distinguished depending on a patient's age and infected site, *Candida* intertrigo, erythema mycoticum infantile, erosio interdigitalis blastomycetica, candidal paronychia and onychia, candida onychomycosis, and oral candidiasis. A 70-year-old woman presented with the following symptoms: pain, burning sensation, dryness, and erosion of the upper lip, lichen planus-like onychodystrophy of the fingernails. First, Skin biopsy showed features of lichen planus. But, systemic glucocorticoids are not effective in treating erosive lip lesions. KOH examination and culture of specimens from the upper lip showed hyphal elements and growth of *Candida albicans* respectively. Antifungal agent was administered. After oral medication, symptoms were improved but there was repeated recurrence. We report a case of mucocutaneous candidiasis mimicking lichen planus.



성균관대의대 삼성서울병원 피부과

박세원 · 박혜영 · 이동윤

Blastomycosis is caused by the thermally dimorphic fungus *Blastomyces dermatitidis*, and manifests as a chronic granulomatous and suppurative disease. Most cases of cutaneous blastomycosis occur after lymphohematogenous spread from a primary pulmonary infection. Disseminated cutaneous lesions are characteristically ulcerative or verrucous. *B. dermatitidis* flourishes in the humid environs of the Mississippi and Ohio River valleys and the Great Lakes region and the occurrence is rare in other areas. We report a case of cutaneous blastomycosis that developed in a 45-year-old man who had lived for 2 years in Tennessee.