The 16th Annual Meeting
The Korean Society for Psoriasis

PROGRAM BOOK

September 15, 2012

COEX InterContinental Hotel Seoul,
Seoul, Korea

Organized by
The Korean Society for Psoriasis
Co-sponsored by
The Korean Dermatological Association
The Korean Society for Investigative Dermatology

인사말씀

대한건선학회 회원 여러분

장마와 혹서의 계절에 모두 안녕하십니까?

여러분의 성원으로 대한건선학회는 이제 16회 연례학술대회를 개최하게 되었습니다.

금년에도 유익한 프로그램을 만들기 위해 최선을 다했습니다. 우선 명망있는 해외 초청 연자를 모셨습니다. 벨기에 University Hospital Leuven의 Siegfried Segaert 교수는 환자중심치료를 통한 국소요법의 순응도 문제 극복에 대하여, 일본 Juntendo 대학의 Shigaku Ikeda 교수는 전신성농포성건선에서 granulocyte apheresis의 효과에 대해 강의를 할 예정입니다. 올해는 특히 대한건선학회의 창립멤버이자 초대 회장을 역임하신 윤재일 교수님께서 정년을 맞이하게 되셨으며 이를 기념하는 강연을 특별순서로 준비하였습니다. 이외에도 건선을 치료하시는 모든 분들에게 항상 도전을 가져다 주는 농포성건선, 홍피성건선, 특수 부위의 건선과 임신 시 건선의 치료 등에 대한 대처법을 교육강연을 통해 제시하고자 합니다.

또한 아시아지역의 대표적인 건선 포럼으로 성장하고 있는 PSOR Summit 2012가 이틀간의 일정으로 대한건선학회 16회 학술대회 종료와 동시에 같은 장소에서 시작하게 됩니다. 건선치료에 있어 의사와 환자의 시각의 차이와 이에 따른 치료의 적극성, 순응도 및 만족도 감소 등의 문제를 세계적인 전문가들을 모시고 깊이 있게 논의하는 자리가 될 것입니다. 연례학술대회에 참여하신 분들에게는 PSOR Summit의 초청장을 드립니다. 이번 학술대회에 참여하여 주신 국내외 연자와 좌장 여러분, 그리고 준비하기 위해 애쓴 대한건선학회 임원진 여러분께 다시 한 번 감사드리며 앞으로도 지속적인 관심과 지도 편달을 부탁드립니다.

2012. 9. 15

대한건선학회 회장 **이 주 홍**

INFORMATION

◆ **Advance Registration**

Not available

◆ **On-site Registration**

Physicians: ₩20,000 (including annual membership)
Residents: free

◆ **Official Language**

Oral presentations will be made in Korean language. However, all the presentation material should be prepared in English. Non-Korean participants are allowed to use English language in oral presentations.

◆ **Venue: COEX InterContinental Seoul**

159 Samsung-dong, Gangnam-gu
Seoul 135-975, South Korea
Tel: +82-2-3452-2500, Fax: +82-2-3430-8000
E-mail: coexseoul@interconti.com

◆ **Presentation**

Please be advised that slide projection has been completely replaced by beam projection and will be no longer available. Those who would like to use beam projection are advised to use Microsoft PowerPoint (version 2000 or compatible). Double slide projection or overhead projection is not available for the presentation.

- Suggested duration of presentation:

Free communications	7 minute	presentation + 1 minute	discussion
Educational lectures	13 minute	presentation + 2 minute	discussion
Special lectures	50 minute	presentation + 5 minute	discussion

▶ Preview Booth: Located in Registration Area (Harmony Level)

All the presenters are required to submit their presentation material at least 1 hour prior to the scheduled presentation time. Recommended media for digital files are CD-ROM or USB type memory. Digital files in presenter's notebook computers will not be accepted.

PROGRAM

MORNING SESSION

09:30-09:50 **등 록**

09:50-10:00 **개회사** **이주흥** (대한건선학회 회장)

축 사 **김형옥** (대한피부과학회 회장)

10:00-11:00 **자유연제(1)** 좌장: **최지호** (울산의대), **노영석** (한양의대)

FC-8 Cyclosporine Therapy on the Psoriasis: Efficacy and Safety ····· **36**

PARK Se-Won, KIM Cho Rok, LEE Joo-Heung
Department of Dermatology, Samsung Medical Center, Sungkyunkwan University School of Medicine

FC-9 A Multicenter, Randomized, Open Pilot Trial Assessing the Efficacy and Safety of Etanercept 50 mg Twice Weekly Followed by Etanercept 25 mg Twice Weekly, the Combination of Etanercept 25 mg Twice Weekly and Acitretin and Acitretin Alone in Patients with Moderate to Severe Plaque Psoriasis ····· **37**

YOUN Jai Il[1], LEE Joo-Heung[2], KIM Tae-Yoon[3], CHOI Jee-Ho[4], PARK Chul Jong[5], CHOE Yong-Beom[6], SONG Hae Jun[7], KIM Nack-In[8], KIM Kwang Joong[9], LEE Jeung-Hoon[10], YOO Hyun-Jeong[11]
[1]*Department of Dermatology, Seoul National University College of Medicine, Seoul;*
[2]*Samsung Medical Center Department of Dermatology Sungkyunkwan University School of Medicine Seoul;*
[3]*Department of Dermatology, College of Medicine, The Catholic University of Korea;*
[4]*Department of Dermatology, Asan Medical Center, University of Ulsan College of Medicine, Seoul;*
[5]*Department of Dermatology, College of Medicine, The Catholic University of Korea, Seoul;*
[6]*Department of Dermatology, Konkuk University School of Medicine, Seoul;*
[7]*Department of Dermatology, College of Medicine, Korea University, Seoul;*
[8]*Department of Dermatology, College of Medicine, Kyung Hee University;*
[9]*Department of Dermatology, Hallym University Sacred Heart Hospital, Korea;*
[10]*Department of Dermatology, School of Medicine, Chungnam National University, Daejeon;*
[11]*Pfizer Pharmaceuticals Korea Limited, Korea*

11:00-12:00 **[Special Lecture 1]** 좌장: **김광중** (한림의대)

"Overcoming the Challenges of Adherence to Topical Therapy through Patient-Centered Care" ····· **12**

Prof. **Siegfried Segaert** (*University Hospital Leuven, Belgium*)

12:00-13:30 **점심식사(학회제공) 및 평의원회**

AFTERNOON SESSIONS

13:30-14:10 **[Special Lecture 2]** 좌장: **이주흥** (성균관의대)

"나와 건선, 그리고 대한건선학회" **윤재일** (서울의대) ····· **16**

14:10-14:50 **[Special Lecture 3]** 좌장: **김낙인** (경희의대)

"Effect of Granulocyte and Monocyte Adsorption Apheresis (GCAP) for the Treatment of Generalized Pustular Psoriasis (GPP): Results from Multicenter Clinical Trial in Japan" ····· **19**

Prof. **Shigaku Ikeda** (*Juntendo University, Japan*)

14:50-15:50 **자유연제(2)** **좌장: 계영철** (고려의대), **김태윤** (가톨릭의대)

15:50-16:10 *Coffee Break*

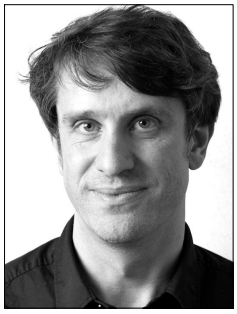
16:10-17:10 **교육강연** 좌장: **송해준** (고려의대), **정 현** (대구가톨릭의대)

Psoriasis requiring special considerations

17:10-17:30 **폐회 및 총회**

SPECIAL LECTURES

CURRICULUM VITAE



Siegfried Segaert
University Hospital Leuven,
Belgium

Education:

Secondary Education (1980-1986): Sint-Jozefsinstituut, Bruggestraat Torhout (Belgium)
Mathematics 8 hours + Latin
Higher Education (1986-1993)
Candidature in Medicine: Katholieke Universiteit Leuven Campus Kortrijk (Belgium)
1. High Distinction (magna cum laude) July '87 (81,4%)
2. High Distinction (magna cum laude) July '88 (79,1%)
3. Highest Distinction (summa cum laude) July '89 (86,8%)
Doctorate in Medicine: Katholieke Universiteit Leuven (Belgium)
1. Highest Distinction (summa cum laude) July '90 (88,8%)
2. Highest Distinction (summa cum laude) July '91 (88,3%)
3. Highest Distinction (summa cum laude) July '92 (87,2%)
4. Promotion to Medical Doctor (MD) June 29, 1993
Highest Distinction with Congratulations of the Examination Commission (89,6%)
(summa cum laude with congratulations)
Doctor in Medical Sciences (PhD) Katholieke Universiteit Leuven (Belgium) May 14, 1999
Dermatologist Katholieke Universiteit Leuven (Belgium) July 31, 1999
Degree in Hospital Management Katholieke Universiteit Leuven (Belgium) 2005

Profession:

Clinical Dermatology
Assistant Dermatology:
August-September ˝3: UZ Sint-Rafael Leuven Belgium Prof. Dr. H Degreef
October ˝3-September ˝4: AZ Sint-Lucas Brugge Belgium Dr. M Vande Kerckhove
October ˝8-July ˝9: University Hospital Leuven Belgium Prof. Dr. H Degreef
Senior Assistant Dermatology:
August-September '99: University Hospital Leuven Belgium Prof. Dr. H Degreef
Supervisor Dermatology:
From October ˝9 on (20%): University Hospital Leuven Belgium Prof. Dr. H Degreef
From August 2001 (100%): University Hospital Leuven Belgium Prof. Dr. H Degreef
Deputy Clinical Head Dermatology:
From August 2002 (100%): University Hospital Leuven Belgium Prof. Dr. H Degreef

SL-1

Overcoming the Challenges of Adherence to Topical Therapy through Patient-Centered Care

Siegfried Segaert

University Hospital Leuven, Belgium

Adherence to topical psoriasis therapies is generally low (around 50%) and therefore jeopardizing optimal treatment outcome. Adherence is difficult to measure but new tools have been developed such as screw caps containing a microprocessor. Adherence is determined by numerous factors which are patient-specific (age, sex, alcohol or nicotine abuse, marital status), treatment-specific (topical vs. other therapies, simplicity of treatment scheme,…) as well as disease specific (severity, localization of psoriasis). Poor adherence to topical therapy can be overcome through a patient-centered, collaborative approach in which the patient is involved in therapeutic decisions, indicating his/her preference. Building on a good doctor-patient relationship and informing the patient about the dosing scheme, possible side effects, effectiveness is important to maintain adherence. There is a preference for topical drugs with a speedy onset of action, a once daily application, a good tolerability and safety and a convenient not too greasy base that can be used on body as well as scalp psoriasis. The fixed combination of calcipotriol and betamethasone dipropionate in a gel base meets those requirements.

CURRICULUM VITAE

YOUN Jai Il, M.D., Ph.D.
Department of Dermatology,
Seoul National University College of Medicine,
Seoul, Korea

학력, 경력

1963. 3 - 1966. 2 부산시 경남고등학교 졸업
1966. 3 - 1968. 2 서울대학교 문리과대학 의예과 수료
1968. 3 - 1972. 2 서울대학교 의과대학 졸업
1973. 3 - 1975. 2 서울대학교 대학원 의학과 석사과정 수료
1975. 3 - 1979. 2 서울대학교 대학원 의학과 박사과정 수료

학위, 수련 및 면허

1972. 2. 26 의학사
1975. 2. 26 의학석사
1979. 2. 26 의학박사
1971. 9. 15 ECFMG 합격 (163 076 3)
1972. 2 의사국가시험 합격 (의사면허증, 12894)
1972. 3 - 1977. 2 서울대학교 의과대학 부속병원 인턴 및 피부과 레지던트 수료
1974. 10- 1975. 3 강원도 양구군 보건소 진료의사 근무
1977. 2 피부과 전문의시험 합격. 피부과 전문의 (피부전문의 자격증 180)

해외 연수

1985. 8 - 1986. 8 미국 하바드대 광의학 연구소 연구원
1990. 4 - 1990. 7 미국 하바드대 피부과 초청교수
1997. 5 - 1997. 6 미국 미시간대 초청교수
2002. 6 - 2002. 7 덴마크 알우스대 초청교수
2006. 6 일본 히로사키대 방문교수

경력

학내경력

1977. 3 - 1979. 2 경희대학교 의과대학 피부과 전임강사
1977. 3 - 1979. 2 경희의료원 피부과장
1977. 3 - 1979. 2 경희대학교 의과대학 피부과 주임교수

1979. 3 - 1982. 2 경희대학교 의과대학 피부과 조교수
1982. 10- 1987. 10 서울대학교 의과대학 피부과 조교수
1987. 10- 1992. 10 서울대학교 의과대학 피부과 부교수
1992. 10- 현 재 서울대학교 의과대학 피부과 교 수
1990. 7 - 1998. 7 서울대학교 의과대학 피부과 주임교수
1990. 7 - 1998. 7 서울대학교병원 피부과장
서울대학교병원 병원보 편집위원
서울대학교 의과대학 인사위원

국외교수 경력

1999. 11 - 2000. 11 Yamaguchi University. Japan Non Resident Professor
2011. 4 - Present China Medical University. China Honorary Professor

학회 경력

대한피부과학회
이 사 (1984 - 1987) (1991 - 2001) (2003 - 2005)
학술이사 (1987 - 1991)
이 사 장 (2001 - 2003)
부 회 장 (2005 - 2006)
차기회장 (2009 - 2010)
회 장 (2010 - 2011)
학술위원회 간사 (1985 - 1991)
연구분과위원회 간사 (1985 - 1991)
교육위원장 (1997 - 1999)
교과서편찬위원회 위원장 (1997 - 2001)
영문잡지편찬위원회 위원장 (1997 - 2005)
의료전달체계 및 전공의 수급 대책위원회 위원장 (2001 - 2003)
연구분과위원회 위원장 (2001 - 2003)
간행위원장 (2001 - 2003)
홍보위원장 (2003 - 2005)
학술위원장 (2005 - 2007)
재정위원장 (2007 - 2009)
건선연구분과위원회 위원장 (1997 - 2001)
광의학연구분과위원회 위원장 (1999 - 2003)
화장품연구분과위원회 위원장 (2008 - 2010)
제8차 아시아피부과학회 조직위원회 위원장 (2006 - 2008)

대한건선연구회 초대회장 (1997 - 2000)
대한건선학회 초대회장 (2000 - 2001) 운영위원 (2001 - 현재)
대한광의학회 회장 (1999 - 2003) 평의원 (2003 - 현재)
대한화장품의학회 회장 (2008 - 2010) 고문 (2010 - 현재)

대한피부연구학회	이사 (1991 - 2003)
	이사장 (1993 - 1995)
	차기회장 (2003 - 2005)
	회장 (2005 - 2007)
대한임상약리학회	평의원
대한의진균학회	평의원 (1998 - 2004)
대한코스매틱피부과학회	이사 (2000 - 2010)
대한여드름학회	평의원 (2004 - 2006)
대한케미칼필링연구회	이사 (2008 - 2009)
대한광과학회	이사 (2009 - 2010)
대한민국 의학한림원	정회원 (2004 - 현재)

SL-2

나와 건선, 그리고 대한건선학회

YOUN Jai Il

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

When I first established psoriasis clinic in Seoul National University Hospital in the year of 1982, I could see some patients took methotrexate or oral steroids without appropriate prescriptions from dermatologists. Other patients even visited so called illegal 'pharmacy specializing in dermatology', and many of them experienced adverse drug side effects. Since patients did not even figure out the concept of drug side effects and complained about rebound phenomena after quitting those medications at our clinic, dermatologists went through a difficult time.

Psoriasis is intrinsically a recalcitrant disease. However, there has been a remarkable progress during last 30 years. When I was a medical student, the fundamental question of psoriasis was whether the pathogenic process started from epidermis or dermis. However, there has been a rapid progress in our understanding of psoriasis pathogenesis, and biologics therapies even targeting specific process have been actively introduced. In addition to biologics, several kinds of topical vitamin D agents have been used in the clinic, and phototherapy has evolved from high pressure mercury lamp, which was quite uncomfortable, to 311 nm monochromatic ultraviolet therapeutic regimen. Oral cyclosporine and retinoid have also proved their efficacies for moderate to severe psoriasis. New medications with higher efficacy and lower side effects are expected to be developed serially in the near future, and each of these drugs will be actively applied in the clinical setting based on therapeutic strategy including combination, rotation regimen and sequential regimens.

Let me briefly categorize my major research areas for last thirty years.

1. Epidemiological studies and clinical research for the psoriasis in Korean patients during the period of 10, 20, and 30 year intervals.
2. Diverse aspects of facial psoriasis: We originallystudied clinical characteristics of psoriasis in the face including clinical manifestation, classifications, development of area calculation method, construct validity of severity measurement, and clinical trials of therapeutic agents.
3. Diverse aspects of phototherapy in Korean psoriasis patients: We first introduced 311 nm narrow band UVB phototherapy, and studied cutaneous interactions and reported various phototherapeutic regimens. Since NBUVB was first introduced at that time, unlike broad band UVB, we came up with various original ideas for that field.

4. Introduction of various topical treatment and anthralin phototherapy: We tried various topical agents for the treatment of psoriasis in the time when steroid was the only treatment method.
5. Research about effective molecular mechanisms and therapeutic regimen of topical vitamin D agents.

Again, psoriasis is hard to cure. During my practice, I should always calm down lots of patients suffering from emotional anxiety caused by cosmetic problems and even occupational instability in addition to medical treatments. It has passed thirty years since I had first set up psoriasis clinic in Seoul National University Hospital. Although I tried my best to establish best clinic in the nation, conduct cutting-edge research, seek advisable medical education and drive a prosper of Korean Society for Psoriasis, a lot of works remained to be done.

Since we had experienced the importance of education for patients and necessities to discuss important academic issues of psoriasis seeking development of related disciplines, we founded Korean Society for Psoriasis in Shilla hotel on 15 November, 1996. I was elected as the chairman, Nak-In Kim as assistant administrator, and Kwang-Jung Kim as financial director. In 9 September 1997, inaugural assembly and 1st academic conference was convened, and I was nominated as the first president. I served the two consecutive terms for 4 years as president. Since then, Korean Society for Psoriasis has reshuffled the minor organizationsand developed rapidly hosting the annual conference and publishing journal articles for last 15 years. And we have made regular exchanges with Japanese Society for Psoriasis Research and participated with international psoriasis conference sponsored by International Psoriasis Network. I am quite proud that KSP has entered upon a mature phase with the remarkable achievements both internally and externally. I find these of my contributions quite rewarding and want to express my special thanks for the former and current board members of KSP and also for the members of Korean Dermatological Association, who have always supported KSP.

Closing my remarks, I definitely believe that KSP will develop consistently and finally develop into world leading group in the near future.

CURRICULUM VITAE

Shigaku Ikeda, M.D., Ph.D.
Department of Dermatology,
Juntendo University School of Medicine,
Japan

Education and professional training

1982	M.D., Juntendo Univ., Sch of Med, Tokyo
1986	Board Certified Dermatologist, Jpn Dermatological Association
1987	Ph.D., Juntendo Univ., Graduate Sch of Med, Tokyo
1993-95	Postdoctoral Fellow, Dept. of Dermatol, UCSF, San Francisco, CA, USA
1995	Research Associate Professor, Ibid

Professional background

1987-93	Lecturer, Dept of Dermatol, Juntendo Univ., Sch of Med, Tokyo
1995-2002	Assistant Professor, Ibid
2002-04	Associate Professor, Ibid
2004-	Professor And Chair, Ibid
2006-	Vice Director, Atopy (allergy) Research Center, Juntendo Univ.

Research fields

Keratinizing and Bullous Disorders (including psoriasis)
Hair Disorders, Medical Mycology, Atopic Dermatitis

Awards

1993 Research Fellowship, Dermatology Foundation, USA
2000 Basic Medical Science-Shiseido award, Jpn Dermatological Association

Scientific activities

Jpn Dermatological Association (delegate)
Jpn Society for Investigative Dermatology
Jpn Society for Psoriasis Research
Jpn Society for Apheresis (board of directors)
Jpn Society for Medical Mycology
Jpn Society of Allergy
Society for Hair Science Research (board of directors) (Jpn)
American Academy of Dermatology (international fellow)

Editorial board

J Invest Dermatol, Associate Editor (2003-07)
Arch Dermatol Res, Editorial Board (2004-)

SL-3

Effect of Granulocyte and Monocyte Adsorption Apheresis (GCAP) for the Treatment of Generalized Pustular Psoriasis (GPP): Results from Multicenter Clinical Trial in Japan

Shigaku Ikeda

Department of Dermatology, Juntendo University School of Medicine, Japan

Recently, dysregulated immune profile affected by myeloid lineage leucocytes (neutrophils and monocytes/macrophages) appears to be a major factor in the immune pathogenesis of GPP. Accordingly, most affected patients have elevated neutrophils, which show activation behavior, and biopsy specimens from psoriatic lesions, notably patients with GPP reveal extensive neutrophils infiltration into the epidermis that causes Kogoj's spongiotic pustules.

In light of afore background, we thought that patients with GPP should respond favorably to selective depletion of elevated neutrophils. Further, recently an adsorptive type extracorporeal granulocyte and monocyte apheresis (GCAP) system has been developed for selective depletion of myeloid lineage leucocytes. GCAP in patients with inflammatory skin lesions including severe pyoderma gangrenosum, and patients with IBD has shown good efficacy in the majority of treated patients.

Fifteen patients with moderate to severe GPP in spite of conventional medications were included. To be eligible > 10% of skin was to be covered with pustules. Ongoing medications, oral etretinate, cyclosporine, methotrexate, prednisolone or topical prednisolone/vitamin D3 could continue if had started well in advance of entry. Each patient could receive 5 GCAP sessions with the Adacolumn at one session/week during 5 consecutive weeks to selectively deplete FcγR and complement receptor expressing leucocytes. Efficacy was assessed by measuring areas with psoriatic lesions and laboratory findings before and 2 weeks post last GCAP.

As a result, one patient did not complete the first GCAP session. Based on the GPP severity scores relative to entry, the overall scores significantly improved (n=14, p=0.0027), and the area of erythroderma (p=0.0042), pustules (p=0.0031), and oedema (p=0.0014) decreased. Likewise, Dermatology Life Quality Index (DLQI) markedly improved (p=0.0016), reflecting better daily function, and quality of life. Twelve patients were judged as responders (85.7%), and 10 patients maintained clinically response for 10 weeks post last GCAP without any change in medication.

EDUCATIONAL LECTURES

EL-1

Pustular Psoriasis

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The term pustular psoriasis refers to a group of entities characterized by the development of multiple sterile pustules on an inflamed erythematous skin. They can be classified historically into generalized and localized forms. Generalized pustular psoriasis is subdivided into acute generalized pustular psoriasis (Von Zumbusch), an annular variant, and impetigo herpetiformis (acute generalized pustular psoriasis during pregnancy). Localized pustular psoriasis is further subdivided into palmoplantar pustulosis and digital pustulosis (acrodermatitis continua of Hallopeau). Although in most cases pustular psoriasis is idiopathic, a number of potential triggers have been identified, primarily drug related.

The course of generalized pustular psoriasis variable.It may be a once only phenomenon, it may recur at intermittent intervals over many years, it may persist indefinitely, or evolve into plaque psoriasis. Morbidity and mortality with the acute generalized form is low because of improved medical manangement and hospital care. Localized type tends to run a chronic course.

One of the major challenge in the field of pustular psoriasis is the lack of high-quality data regarding managment. Treatment of pustular psoriasis typically includes systemic retinoids, cyclosporine, corticosteroids, and methotrexate. More recently, the biologic agents have been used to treat patients with pustular psoriasis.

In this session, I will focus on pustular psoriasis addressing the recent literatures pertaining to the clinical fields. In particular, current presentation will highlight an overview of the emerging concepts in the areas related to the epidemiology, diagnostic tips, characteristic features and frequent provocatives in pustular psoriasis and lastly discuss various therapeutic modalities including biologic agents.

EL-2

Erythrodermic Psoriasis

CHOE Yong-Beom

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Psoriatic erythrodermarepresents the generalized form of the disease that affects all body sites. Although all the symptoms of psoriasis present, erythema is the most prominent feature, and scaling is different compared with chronic stationary psoriasis. Instead of thick, adherent scale there is superficial scaling. Patients with erythrodermic psoriasis lose excessive heat because of generalized vasodilatation, and this may cause hypothermia. Lower extremity edema is common secondary to vasodilatation and loss of protein from blood vessels into the tissues. High-output cardiac failure and impaired hepatic and renal function may occur. Psoriatic erythroderma has a variable presentation, but two forms are thought to exist. In the first form, chronic plaque psoriasis may worsen to involve most or all of the skin surface, and patients remain relatively responsive to therapy. In the second form, generalized erythroderma may present suddenly and unexpectedly or result from nontolerated external treatment, thus representing generalized Koebner reaction. Generalized pustular psoriasis may revert to erythroderma with diminished or absent pustule formation.

Although there are many therapeutic options available to treat patients with erythrodermic psoriasis, there is a lack of large-scale, randomized controlled data. The evidence supporting the use of some therapeutic options, particularly newer drugs such as the biologics, is often limited to case reports and case series. Although these agents have shown promise in the management of erythrodermic psoriasis, there is a paucity of high-quality scientific data. Erythrodermic psoriasis is often an exclusion criterion in the selection of patients for clinical trials to study and approve new antipsoriatic therapy; because of that, there is a clear need for dedicated clinical trials to the safest and most efficacious therapies for the management of erythrodermic psoriasis.

This speech will contain those studies and present a clinical features of erythrodermic psoriasis for our colleagues.

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EL-3

Scalp/Facial/Nail/Genital Psoriasis

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Psoriatic lesions of some specific areas like scalp, face, nails and genitalia are always difficult to manage in the routine psoriasis practice. These areas are related with the patients' quality of life. If any patients have only mild psoriasis in their trunk, they feel severe disappointment when they have some lesions on these specific areas. Scalp is the most frequent site of psoriasis, but it is really intractable area even though they have limited lesions in scalp. Facial psoriasis is now accepted as a sign of acutely aggravating psoriasis. There are some limitations like selection of topical agent and contraindication for phototherapy in treating facial area because of the characteristics and environmental effects. Nail psoriasis has been known as no medication for this area. Currently, biologics like infliximab or ustekinumab could show improvement for nail psoriasis. Genital psoriasis has been under evaluated because most of the genital psoriasis patients do not report their disease to the doctor especially in women. We have to examine this area because genital skin is thin and there could be occurred more complications of topical steroids which were prescribed for exposed areas. In this lecture, I will briefly explain some new topics for psoriasis of each sites.

EL-4

Psoriasis in Pregnancy

PARK Chul Jong

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Psoriasis is a common disease, affecting 2% of the population. In addition to its obvious dermatological manifestation, it has been associated with systemic disorders, including cardiovascular morbidity and mortality, chronic obstructive pulmonary disease (COPD), osteoporosis, and other inflammatory diseases. Some complications associated with psoriasis, among them obesity, smoking, and diabetes are considered risk factors for pregnancy complications such as pre-eclampsia and gestational diabetes. In addition psoriasis is a chronic inflammatory disease which is mentioned in the obstetric literature as a risk factor for increased rate of abortions, recurrent pregnancy losses, failure to conceive, and preterm deliveries. These reports suggest a correlation between psoriasis and pregnancy complications. It has been estimated that each year 106,500 births occur in individuals with psoriasis in the United States, of which 15,000 are women with moderate-to-severe psoriasis. Despite the relevance of the issue of psoriasis in the child-bearing years, little is known about the outcomes of pregnancy on these women. The few studies that have been conducted dealt mainly with mild cases of the disease, and reported conflicting findings. In one outpatient study, 55% reported improvement, 21% reported no change, and 23% reported worsening of their psoriasis during pregnancy. Likewise, a majority reported flaring of their psoriasis in the immediate postpartum period. Pregnant women with psoriasis may be at increased risk for adverse pregnancy outcomes due to comorbidities or other health behaviors associated with the disease. These should be taken into consideration during clinical treatment of women with psoriasis who are in their childbearing years.

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FREE COMMUNICATIONS

FC-1

Koebner Phenomenon in Psoriasis after Liposuction

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Koebner phenomenon represents the appearance of new isomorphic lesions on clinically unaffected areas of skin in response to trauma, infection, and other injuries. The mechanism of Koebner phenomenon is not clear yet, but it may be related to cytokines such as basic fibroblast growth factor. Koebner phenomenon can be developed in psoriasis, vitiligo, erythema multiforme, bullous pemphigoid, pityriasis rubra pilaris, verruca etc.

A 43-year-old female patient was diagnosed with psoriasis 20 years ago. The skin lesionswere well-controlled with topical treatment and excimer laser. She received liposuction five months ago, and psoriasis developed along the liposuction site on her abdomen after two months. We regarded the lesions as Koebner phenomenon of psoriasis, and started oral cyclosporine A therapy. We report a case of Koebner phenomenon in psoriasis after liposuction and this is the first report in Korea.

FC-2

Psoriasis Associated with Juvenile Rheumatoid Arthritis

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Psoriasis is known to be frequently associated with arthritis in up to 40% of patients. Psoriatic arthritis and other arthritis, such as osteoarthritis, rheumatoid arthritis, and gout should be ruled out in psoriatic patient with arthritis. There havebeen few reports of psoriasis associated with juvenile rheumatoid arthritis in Korea. We report a case of psoriasis associated with juvenile rheumatoid arthritis in a 64-year-old woman. She had suffered from juvenile rheumatoid arthritis since she was 10 years old, and total knee replacement arthroplasties of both knees were done 10 years ago for the impaired gait. She was referred to rheumatologist for her shoulder and elbow pain. After the visit to the rheumatology clinic,she was recommended to visit the dermatology clinic for the consultation of skin lesionswhich had been started 5 years ago. She presented with asymptomatic erythematous scaly patches on the both forearms, chest and both feet. Skin biopsy was performedat the lesion of the left forearm, and she was diagnosed with psoriasis. The lesions on her upper extremities were improved after the one month application of topical calcipotriol/betamethasone dipropionate in combination with methotrexate administered by the rheumatologist. The arthritis is markedly improved with the administration of methotrexate, hydroxychloroquine, and non-steroidalanti-inflammatory drugs and erythrocyte sedimentation rate decreased.The skin lesions of other body areas were also improved after several months of treatment and there has been no more worsening of the lesions during 6 months of follow up.

FC-3

A Case of Vitiligo Developed on the Lesions of Psoriasis

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Psoriasis and vitiligo are common skin diseases. The worldwide prevalence of psoriasis and vitiligo in the general population is about 0.1~3% and 0.3~0.5% respectively. Several cases that these two diseases coexisting are reported in theEnglish literature. In cases reported in the English literature, most vitiligo precedes psoriasis in clinical settings when the two diseases coexist. Also, these two diseases are distributed throughout the body separately or overlap partially. The exact pathomechanism of the coexistence of psoriasis and vitiligo is still unknown. Autoimmunity, neuropeptides, and Koebner's phenomenon have been implicated to explain the pathogenic relationship between these two diseases. Herein, we report a case of 20-year-old Korean male who has presented multiple 1~5 cm sized erythematous scaly macules and patches on scalp, trunk and all extremities 17 years ago. He was diagnosed with psoriasis after a biopsy of a skin lesion of the leg and was treated with calcipotriol/betamethasone ointment, desoximetasone oint and Vaseline. His trunk and scalp lesions had improved 9 years ago by topical treatment but the lesions on his hands, feet, and legs still remained. Hypopigmented macules and patches developed on psoriatic lesions of his all extremities 7 years ago and the same lesions also occurredon non-psoriatic lesions over time. He was diagnosed with vitiligo developed on the psoriasis lesions and was treated with methyl-prednisolone cream and diflucortolone ointment for vitiligo. The psoriatic and vitiliginous lesions improved markedly but mild lesions still remain and are continuously treated with topical agents. Our case found to be interesting because the patient had psoriasis preceding vitiligo as well as the vitiligo lesion developing on a psoriasis lesion.

FC-4

Histopathological Features in Psoriasis and Seborrheic Dermatitis of the Scalp

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Psoriasis and seborrheic dermatitis are relatively common inflammatory skin disorders that may present with erythematous scaly patches. The differential diagnosis between seborrheic dermatitis and psoriasis of the scalp can be difficult due to their similarity of clinicopathological features. We evaluated 8 cases of psoriasis and 20 cases of seborrheic dermatitis of the scalp to find favorable criteria for histopathological differential diagnosis. In the psoriasis group, 2 women and 6 men were included with an age range from 8 to 63 years. In the seborrheic dermatitis group, 8 women and 12 men were included with and age range from 16 to 79 years. The histological features showed an increased number of mitotic figures in psoriasis compared with seborrheic dermatitis ($p<0.05$) follicular plugging wasmore common in seborrheic dermatitis (70%) than in psoriasis (25%, $p<0.05$) clubbed and even lengths of rete ridges were more common in psoriasis (100% and 50%) than in seborrheic dermatitis (10% and 5%, $p<0.05$). There were no significant differences in the amount of plasma within parakeratosis, dilatation of infundibulum, intracorneal malassezia, epidermal spongiosis, lymphocytic exocytosis, edema of papillary dermis, extravasation of erythrocytes, and solar elastosis. We suggest difference in mitotic figures would be helpful in the differential diagnosis between psoriasis and seborrheic dermatitis of the scalp: more than 5 mitotic figures in 3 high power fields favors the diagnosis of psoriasis, whereas less than 3 suggests seborrheic dermatitis.

FC-5

A Case of Erythrodermic Psoriasis Treated Effectively with Ustekinumab

KANG Min Ji, MOON Jong Hyuk, BANG Chan Yl, YANG Bo Hee, BYUN Ji Won, CHOI Gwang Seong, SHIN Jeong Hyun,

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Erythrodermic psoriasis is a severe form of psoriasis which may develop de novo or from preceding plaque type psoriasis. This type of psoriasis is not uncommon and it has an estimated prevalence of 1% to 2.25% of patients with psoriasis. Itcan be challenging to treat and carries substantial morbidity and increased risk ofmortality. Although conventional systemic treatments including acitretin, cyclosporinand methotrexate have shown efficacy in patients with erythrodermic psoriasis, failure or intolerance is frequently observed. In recent years, new emerging targeted biologic agents, such as anti-tumor necrosis factor agents and ustekinumab, were reported to be safe and effective treatment for moderate to severe psoriasis. Among these biologics, ustekinumab, anti-IL-12/23 p40 monoclonal antibody, has shown efficacy in patients with severe psoriasis. However, there are only few reports and limited case seriesof erythrodermic psoriasis treated with ustekinumab. Herein, we present a case of erythrodermic psoriasis in a 75-year-old man, who had failed to conventional systemic treatments, successfully treated with ustekinumab without any adverse events.

FC-6

A Case of Refractory Psoriasis Treated with a Combination of Etanercept and Methotrexate

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Etanercept is a human tumor necrosis factor (TNF) receptor p75 Fc fusion protein that blocks interaction of TNF-a with cell surface TNF-a receptors. Etanercept has been proven to be highly effective in treatment of psoriasis. Among some severe patients treated with etanercept alone, have shown insufficient efficacy. Such cases can be an indication to switch to an alternative biologics or to combine etanercept with other conventional treatments.

A 50-year-old woman who had not responded to conventional treatments for 9 years, was administered etanercept. She was markedly improved with etanercept monotherapy, but relapsed. To prevent aggravation of recurred lesion, methotrexate was combined later in the course of treatment. After administration of combination treatment, her lesions showed great improvement without any side effects.

The concomitant use of etanercept and methotrexate has already been studied for rheumatoid arthritis. Recently there are several studies for psoriasis about combination treatment to sustain efficacy and safety. We report a case of refractory psoriasis who showed improvement with the combination of etanercept and methotrexate.

FC-7

Clinical Study on Psoriasis Patients for Past 30 Years (1982-2012) in SNUH Psoriasis Clinic

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Psoriasis is a chronic relapsing disorder which shows variable clinical features. The long term clinical study with many patients is important to elucidate the epidemiologic characteristic and clinical features of psoriasis. The purpose of this study was to analyze the epidemiological characteristic and clinical features of psoriasis in Korean patients. Epidemiological, clinical data, and assessment of severity with extent and activity of psoriasis were collected from the medical records from 5,084 patients, who had been newly diagnosed as psoriasis in the psoriasis clinic of Seoul National University Hospital between 1982 and 2012. The gender ratio of the psoriasis patients was 1.2:1 (male 54.6%, female 45.4%). The peak age of onset in male was twenties, while it was teenage in female. Total 63.5% of patients developed psoriasis before 30 years of age. Family history of psoriasis was observed in 26.0% of patients. Moderate to severe extent of involvement was more frequently observed in male patients and patients under 30 years of onset agethan in female and patients over 30 years of onset age, respectively. Moderate to severe disease activity was also more frequentlypresented in male patients, but not in patients under 30 years of onset age. The most common morphological type was nummular type (56.7%), followed by large plaque type (28.5%) and guttate type (8.5%). Nail involvement was accompanied in 26.4% of patients. We demonstrated the epidemiological and clinical characteristics of psoriasis in Korean patients.

FC-8

Cyclosporine Therapy on the Psoriasis: Efficacy and Safety

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The authors conducted a retrospective study on the efficacy and safety of cyclosporine through electronic medical records for 10 years from January 2001 to February 2011. The enrolled 401 patients were treated with low-dose cyclosporine. Baseline average PASI score 9.8 ± 7.5 significantly decreased to 5.8 ± 4.0 by 41% after 12 weeks of administration of medicine. Side effects included gastrointestinal symptoms, transient serum creatinine elevation and temporary hypertension. In case of drug discontinuation, the symptoms all disappeared. There was a significant reduction in the PASI score even when retreatment was done due to recurrence of symptoms. From this research, we can see the treatment using low-dose, short-term cyclosporine is effective and relatively safe to use cyclically for psoriasis even though it has temporary side effects.

FC-9

A Multicenter, Randomized, Open Pilot Trial Assessing the Efficacy and Safety of Etanercept 50 mg Twice Weekly Followed by Etanercept 25 mg Twice Weekly, the Combination of Etanercept 25 mg Twice Weekly and Acitretin and Acitretin Alone in Patients with Moderate to Severe Plaque Psoriasis

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Background: Etanercept, a soluble TNF receptor-Fc fusion protein, at doses of 25 mg and 50 mg twice weekly has been shown to be effective in improving plaque psoriasis, and has a favorable safety and tolerability profile. Acitretin is widely used to treat psoriasis in Korea, but the combination of etanercept plus acitretin has not been evaluated among Korean patients with moderate to severe plaque psoriasis.

Objectives: To investigate the efficacy and safety of combination therapy with etanercept and acitretin in the treatment of patients with moderate to severe psoriasis.

Methods: This is a multicenter, randomized, open label, pilot study to assess the efficacy and safety of three different regimens of etanercept 50 mg BIW followed by etanercept 25 mg BIW, combination of etanercept 25 mg and acitretin, and acitretin alone in psoriasis subjects in Korea. Sixty adult patients with moderate to severe psoriasis were randomly assigned to three groups to receive etanercept 50 mg twice weekly for 12 weeks followed by etanercept 25 mg twice weekly for 12 weeks or etanercept 25 mg twice weekly plus acitretin 10 mg twice daily for 24 weeks or acitretin 10 mg twice daily alone for 24 weeks. The

primary efficacy endpoint was the proportion of subjects achieving a 75% improvement from baseline in Psoriasis Area and Severity Index (PASI) score at week 24.

Results: The PASI 75 response rate at week 24 in the etanercept 25 mg plus acitretin 10 mg group (57.9%) and etanercept 50 mg/etanercept 25 mg group (52.4%) was higher than in the acitretin 10 mg group (22.2%). The PASI 50 response rateand the proportion of subjects achieving clear or almost-clear status in Physician Global Achievement (PGA) were seen in a greaterproportion of patients in the etanercept plus acitretin group (84.2%/52.6%) and etanercept 50 mg/etanercept 25 mg group (71.4%/52.4%) compared to theacitretin group (44.4%/16.7%) at week 24. The overall incidences of adverse events were similar in the three treatment groups.

Conclusion: In these Korean patients with moderate to severe plaque psoriasis, etanercept or the combination of etanercept plus acitretin was more effective than acitretin alone in improving the symptoms and signs of disease, and was well tolerated throughout the study. Larger studies would be needed to confirm these results.

FC-10

CCR6 is Required for Epidermal Trafficking of Gamma Delta-T Cells in an IL-23-induced Model of Psoriasiform Dermatitis

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We reported that a subset of CCR6+, γδ-low (GDL) T cells that express Th17 cytokines in mouse skin participates in IL-23-induced psoriasiform dermatitis at the last KSP meeting.

We used CCR6-deficient KO and WTmice to analyze skin trafficking patterns of GDL T cells and function-blocking mAbs to determine the role of CCR6 in IL-23-mediated dermatitis. Herein, CCL20 was highly upregulated in IL-23-injected WT mouse ear skin as early as 24 hours after initial treatment, and large numbers of CCR6+ cells were observed in the epidermis of IL-23-injected WT mice. Anti-CCL20 mAbs reduced psoriasiform dermatitis and blocked recruitment of GDL T cells to the epidermis. In CCR6 KO mice, GDL T cells failed to accumulate in the epidermis after IL-23 treatment, but the total numbers of GDL T cells in the dermis of WT and CCR6 KO mice were equivalent. There was an -70% reduction in the proportion of IL-22+ GDL T cells in the dermis of CCR6 KO mice (vs. WT mice), suggesting that effector function and epidermal recruitment of GDL T cells are impaired in CCR6-deficient mice.

Thus, these data show that CCR6 regulates epidermal trafficking of γδ-T-cell subsets in the skin and suggest the potential of CCR6 as a therapeutic target for psoriasis.

FC-11

Elevation of IL-1RA and IL-17 in Psoriasis Patient with Eruptive Inflammatory Phenotype

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Plaque-type psoriasis manifests with various morphological phenotypes and different clinical activity over time in the same individual or from one patient to another. Circulating cytokines, especially T-helper (Th) 1- and Th17-related, have been suggested to reflect the inflammatory nature of psoriasis. However, studies regarding cytokine profile according to morphological phenotypes are quite scarce. We sought to analyse the circulating Th1 and Th17 cytokines according to clinical phenotype and investigated the correlation between disease severity [Psoriasis Area and Severity Index (PASI)] and the serum level of inflammatory cytokines. Seventy-one patients with psoriasis were divided into two groups according to clinical phenotype: chronic stable (CS) and eruptive inflammatory (EI). Th1- and Th17-derived cytokines were measured using multiplex cytokine assay. It was noted that interleukin (IL)-1 receptor antagonist and IL-17A were elevated in the EI group compared with the CS group. We also noticed that the PASI is relatively well correlated with serum cytokine level in the CS state but not as well in the EI counterpart. The level of serum inflammatory cytokines differs according to morphological phenotype. Also, the PASI does not seem to be a suitable tool to assess disease severity in patients with psoriasis with EI characteristics.

FC-12

Serum Vitamin D Status between Psoriasis Patients and Healthy Controls in Korea

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Background: Vitamin D is known for immunomodulator in psoriasis. However there is no recent study analyzing serum vitamin D levels in Korean psoriasis patients. **Objective:** The purpose of this study was to investigate vitamin D levels in psoriasis patients. In addition, we evaluate other factors which may affect serum vitamin D levels. **Methods:** A cross-sectional study was conducted for 1 year in chronic plaque psoriasis patients (n=96) and healthy controls (n=66). Serum 25 (OH)D, IgE, PTH, calcium, total cholesterol and TGlevels were measured in a blood laboratory test. Patient's age, sex, PASI score, recent 3 months radiation and topical vitamin D treatment history were collected by retrospective medical records. Data were analyzed by using the independent t-test, chi square analysis and logistic analysis with SPSS 18.0 version. **Results:** Relative vitamin D insufficiency [25 (DH)D levels: 20~30 ng/ml] was 26.4% and vitamin D deficiency [25 (DH)D levels: < 20 ng/ml] was 42.6% in total psoriasis patients and controls. The mean of vitamin D level is 23.47 ng/ml in psoriasis patients and 20.89 ng/ml in healthy controls (p=.088). Prevalence of vitamin D deficiency was 42.7% in psoriasis patients and 45.5% in healthy controls (p=.075). There is no meaningful difference of vitamin D levelbetween severe (PASI $\geq$10) psoriasis patient and mild (PASI < 10) psoriasis patient (p=.796). Radiation (p=.466), topical vitamin D therapy (p=.344) dose not have influence on vitamin D level in psoriasis patient. Our data shows only positive correlation between vitamin D level and age (OR:1.024 p=.046), serum cholesterol (OR:1.002, p=.002). However vitamin D level does not directly correlate with sex, IgE, PTH, calcium, TG levels. **Conclusion:** There was no meaningful difference of serum 25 (OH)D levels between psoriasis patients and healthy controls.

FC-13

Assessment of Pruritus in Scalp Psoriasis : Clinical Characteristics and Association with Density of Intra-Epidermal Nerve Fibers

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Background: Pruritus is a common symptom among many psoriatic patients, especially in scalp psoriasis. As a cutaneous sensory perception, unmyelinated nerve fibers in the papillary dermis and epidermis are involved as major itching receptors.

Objectives: This study was aimedto determine the possible correlation between clinical characteristics, severity of scalp psoriasis and the density of intra-epidermal nerve fibers (IENF) in scalp psoriatic lesions.

Methods: A total of 35 patients (13 women and 22 men; mean age 40.9 ± 16.8 years)with scalp psoriasis were enrolled for evaluation of the clinical characteristics of pruritus using Leuven itch scale, and also estimated the severity of scalp psoriasis (PSSI). Biopsies were taken from lesional and nonlesional skin of 19 patients. Immunofluorescence staining using protein gene product (PGP) 9.5 and confocal laser scanning microscopy were performed to determine the density of IENF.

Results: Thirty-two patients (91.4%) complained of pruritus which was associated with scalp psoriasis and it negatively affected quality of life in varying degree. There was a positive relationship between PSSI score and intensity of pruritus (r=0.336, p=0.048). The density of IENF in psoriatic lesion was significantly higher than that in nonlesional scalp (6.2 ± 1.2 vs 4.2 ± 1.6, p< 0.001). However, correlation between density of IENF and PSSI score, and density of IENF and intensity of pruritus were not significant.

Conclusion: These results indicate that the prevalence of pruritusis significantly high among patients with scalp psoriasis and it showed considerable impact on patients' daily living and sleep. Increased density of IENF in psoriatic scalp lesions may have a possible role in development of pruritus.

FC-14

Objective Measurements of Erythema, Elasticity and Scale Could Overcome the Inter- and Intra-Observer Variations of the Subjective Evaluations for Psoriasis Severity

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Background: Most conventional subjective assessments for psoriasis have inevitable inter- and intra-observer variations.

Objective: We investigated the correlations between subjective psoriasis severity indexes and bioengineering parameters. Establishing anobjective severity assessment regimen with meaningful bioengineering parameters is our final goal.

Methods: Subjective Psoriasis Severity Index (sPSI) wasnoted. In addition, bioengineering parameters of color, mechanical properties, and scale were obtainedthrough the mexameter, colorimeter, cutometer, and corneofix respectively.

Results: The most prominently correlated bioengineering parameters were hue (tan-1 b*/a*), desquamation index (DI), and elasticity (R7) for sPSI erythema, scale, and thickness, respectively. The sPSI score, which is the sum of erythema, scale and thickness, was well regressed to a linear formula with brightness (L*) and hue which are sufficiently measured by colorimeter alone.

Conclusion: We suggested an objective Psoriasis Severity Index (oPSI) and verified its validity. Since it is simple, quick and objective method, we hope oPSI would be an assessment aid in the psoriasis clinic.

FC-15

Adalimumab Therapy for Psoriasis in 7 Korean Patients: Efficacy and Safety from 16-week Experience

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Psoriasis is a chronic inflammatory cutaneous disorder characterized by erythematous scaly papules and plaques. Its prevalence is different in various populations and range from 0.1 percent to 3 percent. Adalimumab, the first fully human anti-TNF-α monoclonal antibody binds specifically to soluble and membrane-bound TNF-α, is widely used to manage moderate to severe chronic plaque psoriasis. In the phase III studies of adalimumab, Psoriasis Area Severity Index (PASI) 75 at week 16 was 71% and safety profile was favorable. Up to now, data are lacking on the use of adalimumab for psoriasis treatment in the Korean. Total 7 patients treated with adalimumab were identified through the registry of psoriasis patients receiving biologic agents in our dermatology clinic. Medical data was retrospectively collected from March 2011 to July 2012. All patients were injected adalimumab 80 mg given subcutaneously the first week, followed by 40 mg subcutaneously given the next week and then every 2 weeks thereafter weeks. Data including PASI, body surface area (BSA) and any adverse event were recorded every visit and medical photographs were documented every 4 weeks. All 5 patients, receiving adalimumab 16 weeks or more, achieved PASI 75 at 16 week. In the remaining 2 patients, a patient achieved PASI 75 at 18 week and another patient discontinued adalimumab due to upper respiratory infection. Any adverse event causally related to the treatment was not reported in the 16 weeks treatment period. In this 16 weeks study, overall 71.4% (n=5/7) of patients achieved PASI 75 at 16 week and all patients well toleratedto adalimumab treatment. Ongoing study will include more patients and determine long term efficacy and safety of adalimumab treatment in the Korean psoriasis patient.

FC-16

A Functional Role for Interleukin-21 in Inducing the Expression of CCL20 in Human Keratinocyte Cell Line, HaCaT

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Background: The pathogenesis of psoriasis centers on the formation of a continuous loop of activation of both innate and adaptive immunity, each further induced by the other. Through recent studies, cytokines IL-17 and IL-22 proved to be a vital part of the loop, influencing the keratinocytes to express higher levels of both antimicrobial peptides and chemokines, which is integral in the migration of T cells to the skin. IL-21, a novel cytokine also expressed by Th17 cells, has been found to induce keratinocyte hyperplasia via ERK1/2 activation, its effect on the expression of antimicrobial peptides and chemokines in keratinocyte has not beenreported.

Objective: To observe whether IL-21 has an antimicrobial peptide/chemokine-inducing effect on keratinocytes, using the HaCaT cell line.

Methods: Quantitative PCR was applied to measure the gene expression of CCL20, CXCL8, β-defensin2, S100A7, and S100A12 in HaCaT keratinocytes with and without IL-21 stimulation.

Results: A significant increase was observed in the chemokines CCL20 and CXCL8, whilst no differencewas noted in the antimicrobial peptides β-defensin2, S100A7, and S100A12 after stimulation of HaCaT cells with IL-21. The expression of CCL20 mRNA peaked when incubated for 4 hours, while the peak expression of CXCL8 was seen with 24-hr incubation with IL-21.

Conclusion: IL-21, similar to IL-17 and IL-22, stimulates the HaCaT cells to induce the expression of CCL20 and CXCL8, but is distinct in that it has no stimulatory effect for antimicrobial peptides.

Keywords: IL-21, CCL20, CXCL8, chemokines, HaCaT, psoriasis

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