Atopic Dermatitis
Topics discussed

- Diagnosis of eczema
- Incidence
- Aggravators
- History and assessment
- Treatments
- Clinical Cases
- Contact details and clinics
**TERMINOLOGY**

**Eczema** =

Greek term “To boil over”

Usually refers to severely inflamed dermatitis, and the signs and symptoms associated with such an acute process (itching, sting, burning of the skin with drainage from lesions)
Types of common eczemas

- **Atopic eczema** (infantile e., flexural e., atopic dermatitis).
- **Contact dermatitis**: is of two types (Allergic contact dermatitis, Irritant contact dermatitis)
- **Xerotic eczema** (asteatotic e., e. craquele or craquelatum, winter itch, pruritus hiemalis)
- **Seborrhoeic dermatitis**: or ("cradle cap" in infants)

Less common eczemas

- **Dyshidrosis** (dyshidrotic e., pompholyx, vesicular e., palmoplantar dermatitis,)
- **Discoid eczema**: (nummular e., exudative e., microbial e.)
- **Venous eczema**: (gravitational e., stasis dermatitis, varicose e.)
- **Dermatitis herpetiformis**: (Duhring’s Disease)
- **Neurodermatitis**: (lichen simplex chronicus, localized scratch dermatitis)
- **Autoeczematization** (id reaction, autosensitization)
Immunological Mechanism of Allergic Contact Dermatitis

**INDUCTION**
- Allergen
- Via Afferent Lymphatics
- Peripheral Lymph Node
- Class II MHC
- Langerhans Cell

**ELICITATION**
- Allergen
- Sensitized T-Lymphoblast
- Mediator Release
- Swelling
- Erythema
- Vesiculation

**Helper T-Cell**
- IL-1
- Proliferation
- IL-2

**Memory T-Cell**
- Sensitized T-Cell
The normal skin barrier

Eczema

Loss of water from corneocytes

H₂O

Cracks between cells

Reduced NMF

Changes in epidermal lipids

(Charlesworth, Am J Med, 2002)
Atopic Eczema

CHILDHOOD ECZEMA
ATOPIC DERMATITIS

• The most common skin disorder seen in infants and children
• 80% present in first year of life
• “Atopic March”: atopic dermatitis → food allergies → asthma → allergic rhinitis
• Characterized by exacerbations and remissions
• Interruption of atopic dermatitis may ↓ incidence of asthma and allergic rhinitis
CLINICAL PRESENTATION

• Objective diagnosis
• Pruritic, erythematous, dry patches
• Scale and linear excoriations
• Thickened skin with well-defined skin markings (lichenification)
• Crusting and oozing common in infants
• Diffuse borders
STAGES of Atopic Eczema

**PHASES**

**Infantile stage:** (0-2 years) tends to start around 3-6 months. Usually affects the face, wrists, nappy area and when severe every part of the body. Often gets infected.

**Childhood stage:** (2-12 years) the skin starts to become dry, cracked and thickened. Usually affects the elbows, back of knees, ankles and back of ears. Severe thickening of the skin is very common in Afro-Caribbeans and Asians.

**Adolescent and adult phase:** (puberty onwards) lichenification of the skin is very prominent now. Affects the elbows, knees, neck and bottom of the eyes.
Distribution

- Cheeks
- Neck
- Chest
- Elbows
- Knees
Morphology

- erythema
- edema
- vesicules
- eczematous pitting
Hand Eczema
Foot Eczema
Atopic Derm Adults
UK Diagnostic criteria Sampson et al

Must have: Major Features

- itchy skin
- family history of atopy
- typical picture, facial, flexures, lichenification

Plus three or more of the following: Minor Features

- Xerosis/ichthyosis/hyper linear palms, keratosis pilaris
- periaricular fissures, dennie-morgan lines
- chronic scalp scaling, pityriasis alba, cataract
Associated Findings

Pityriasis alba
Associated Findings

Xerosis
Associated Findings

Keratosis Pilaris
Associated Findings

Ichthyosis
Hyperlinear Palmar Creases
How common is Atopic Eczema?

- VERY! 10-20% of children in developed countries (Harper et al, 2000)
- Incidence has trebled over the last 30 years (Harper et al, 2000)
- Positive correlations of eczema with higher social classes and air pollution has been confirmed (Simpson, Hanifin, 2005)
- 80% of children will develop eczema in 1st year
- 50% of children will clear by 2 years of age
- 85% of children will clear by 5 years of age
- About 5% of children with eczema will continue into adulthood
Factors influencing poor prognosis

Atopic Eczema

- Onset after 2 years of age (Vickers)
- Severe eczema in infancy
- Atypical location for age of the patient
  (Eczema to extensors, wrists and hands to be more prone to persistence of eczema)
- Severity and duration of eczema are correlated to the incidence of asthma
- Biparental history of atopy have shown to be unfavourable
Effects on Life

Atopic Eczema

Intractable itch

- Sleep depravation
- Disruption to family life
- School/work absenteeism
- Parental marriage problems
- Teasing
- Chronic disease
- Low self esteem
What aggravates Atopic Eczema?

- Heat
- Dry skin and environment
- Prickle
- Allergies
- Irritants
- Infection
- Saliva
- Water
What makes eczema hot and itchy?

- Too many clothes
- Hot baths >29 degrees
- Too many blankets
- Hot cars
- Sport/running around
- Heaters
- Hot school classrooms
What makes eczema dry and itchy?

- Soap, use bath oils or washes
- Air blowing heaters
- Swimming pools
- Australia!!!!
- Therefore apply moisturiser from top to toe regularly and more often when flaring
What prickles eczema and makes it itchy?

- Animal hair/dander
- Woolen clothes
- Sharp seams
- Tags
- Dust mites, molds
- Rough fabrics
Diagnosis?
Taking a good history

First appointment is important in managing the eczema effectively and gain the trust of the patient and family

- Family history
- Coexisting atopic disease
- Immunization
- Allergies, tests, diet manipulation and adequacy
- Growth
- Previous treatments used and outcomes
- Most distressing element
- Sleep disturbance
- Environmental aggravators, assess heat/prickle/dryness
- Effect on family life, school
- Parents expectations from treatment
- YOUR expectation from treatment
INVESTIGATIONS

• Serum IgE levels

• Skin prick tests (Allergy test)

• RAST (checks to see if the body is producing antibodies against common things like house dustmite, pollens, cat and dog hair and food substances)

• Skin biopsy
Patch Test
PATHOPHYSIOLOGY

• Elevated serum IgE levels
• Altered cell mediated immunity
• Correlation of elevated IgE levels and the severity of atopic dermatitis
  – Unclear if high IgE levels are primary or secondary
• *Not all patients with elevated IgE levels have atopic dermatitis*
• Proliferation of T-helper 2 (Th-2)
• Cytokines are produced by Th-2 cells
• Release of calcineurin activates cytokines
• Cytokines irritate tissue and increase IgE synthesis, therefore maintaining inflammatory response
• Decreased numbers of IFN-gamma-secreting Th 1-like cells
• Specific IgE to multiple antigens
• Cytokines are central to the pathogenesis of skin inflammation in AD
Differential Diagnosis

- Seborrheic dermatitis
Differential Diagnosis

- Seborrheic dermatitis
- Scabies
Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs
Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs
- Psoriasis
Differential Diagnosis

- Seborrheic dermatitis
- Scabies
- Drugs
- Psoriasis
- Allergic contact dermatitis
Differential Diagnosis

• Seborrheic dermatitis
• Scabies
• Drugs
• Psoriasis
• Allergic contact dermatitis
• Cutaneous T-cell lymphoma
Assessment of severity

- Completely undress child
- Look for (SCORAD
  http://adserver.sante.univ-nantes.fr/Scorad.html )
- Extent % (1-10)
- Infection (1-3)
- Broken skin 1 /3
- Erythema 1/3
- Lichenification 1/3
- Xerosis 1/3
- Sleep pattern 1/10
- Itch 1/10
Assessment of severity

- Clear – normal skin no evidence of active atopic eczema
- Mild – areas of dry skin, frequent itching +/- small areas of redness
- Moderate - areas of dry skin, frequent itching, redness, +/- excoriation and localised thickening.
- Severe – widespread areas of dry skin, incessant itching, redness (+- excoriation, extensive skin thickening, bleeding, oozing, cracking.)
Selection of treatment

This depends on

- Disease severity
- Age
- Compliance
- Efficacy
- Safety data
- Treatment costs
Eczema Treatments- 2 types

Every day
- avoid aggravators
- moisturiser
- bath oil

Flaring Treatments
- every day treatments +
- steroid ointments
- wet dressings
- cool compresses
- antibiotics
Topical Treatments

First line treatment:

- Emollients - use often every day
- Body - Elocon or Advantan fatty ointment, Dermeze, hydramderm, aqueous cream, Contains squalane, a natural ingredient found in the skin's own oils.
- Steroids use aggressively when flaring
- Face - hydrocortisone 1% or Elidel, bd
- Bath oils (cont’’)
• Antibiotics (for infected eczema)
• Antiviral agents (for eczema herpeticum).
• Steroids are better avoided at this stage.
• Antihistamines (for itching)
• Pimecrolimus (thought to work by modifying the immune system).
• Patient may require admission as they tend to be very unwell.
When to use a wet dressing

- Within 24 hours if cortisone ointments are not clearing the eczema
- Child is waking at night
- Itchy
- Skin is thickened
- If there is blood on the sheets
Why apply wet dressings?

- Reduce itch
- Treat Infection
- Moisturise the skin
- Protect the skin
- Promote sleep
Second line treatment (severe cases):
All these require specialist treatment in the Hospital.

- Phototherapy (using ultraviolet rays UVA, nUVB)
- Immunity suppressing drugs (e.g. oral steroids, azathioprine, ciclosporin, tacrolimus)
- Diet and nutrition (food allergy)
- Alternative therapies (Chinese medicine herbalism)
COMPLICATIONS

• Viral infections like eczema herpeticum, warts and molluscum contagiosum
• Bacterial infections like impetigo (caused by staph aureus)
• Cataracts
• Growth retardation (10% of children are affected but not thought to be related to steroid use)
NO TOPICAL STEROIDS
- remove crusts
- +/- oral/IV acylovir
- most often oral keflex
- admission prn
Bacterial infected eczema

- REMOVE CRUSTS
- Oral keflex/ 10 days if well
- IV flucloxacillin ONLY if unwell or febrile
- General Eczema Care
- Admission prn
Education and information

- Explain cause and course of disease
- Demonstrate quantities and frequency of treatments
- Inform symptoms and signs of bacterial infections
- How to recognise eczema herpeticum
- Ask about use of complementary therapies explain have not be assessed for safety. Should continue to use emollients as well as complimentary therapies
Case One, History

- 11 month old
- 2 month past history of eczema
- Erythema
- Itchy
- Waking every 1-2 hours overnight
- Weeping
- General flare
Case one,
What is the diagnosis?
What is the plan?

- Infected atopic eczema
- admission
- remove crusts/weeping
- oral keflex
- cool compressing 1 hourly, apply dermeze post
- wet dressings to limbs bd
- baby soap
- 2 layers of clothing to bed
- heater in the bedroom
- Diet; breast fed, full diet
Case one, plan continued

- bath oil
- dermeze to face
- dermeze to limbs qid
- hydraderm to trunk qid
- wet t-shirt when red or itchy
- sigmacort 1% or elidel bd, prn
Case one,
Discharge plan

- Sigmacort 1% bd to face, dermeze (50% soft, 50% liquid paraffin) face, qid
- Elocon nocte to limbs and trunk, prn
- hydraderm to body qid
- keflex for 10 days total
- cool compress prn
- bath oil
- follow up 1 -2 weeks
Thank you.

- National Eczema Association
  – www.eczema-assn.org