Clinical Environmental Medicine: definition, awareness, diagnostic of illnesses associated to the environment

Brussels, 19th May 2015

P. Ohnsorge

“Environment & Health” (Public Health)

versus

“Clinical Environmental Medicine”

neither similar nor controversial
Two sides of a medal

- Environment & Health
  - Asking questions:
    - Burdening substances or processes from the environment doing harm to people
    - General risk assessment for the population
    - General strategies
      - Avoidance
      - Prevention (tertiary)

- Clinical Environmental Medicine
  - Asking questions:
    - What kind of symptoms individuals develop from violations by the environment?
    - How to care for those individuals with environmentally associated illnesses
    - Individual strategies
      - Avoidance
      - Prevention (primary / secondary)

Environment & Health

- Toxicology
- Hygiene
- Clinical Environmental Medicine
- Public Health
- Epidemiology

But you should know

- Toxicology has a linear causal approach
  - They have no tools to identify environmentally associated illnesses correctly
  - They disregard
    - Neuro-Endocrine Immune-System (NEIS)
    - susceptibility
    - vulnerability

- Only theoretical no clinical faculties
- React in own structure based on toxicological values
- No acquired theoretical and practice knowledge concerning Clinical Environmental Medicine
- Not offering diagnose and treatment for illnesses associated to the environment

end of the pipe strategy
1. low dose – long time burdening
2. + accumulation
3. + deposition
Deposition of not detoxified burden

1. low dose – long time burdening
2. + accumulation
3. + deposition
4. + mobilisation
5. + multiple burdening
Clinical Environmental Medicine approach

- leaves the toxicological Paradigm of "dose-effect relationship"
- linear causal approach in Research
- way of Risk Assessment exclusively by Epidemiology
- by this secondary and tertiary Prevention
- but has to follow complex systems,
- complex in
- Awareness
- Diagnose
- Treatment
- Prevention

Paradigm of Clinical Environmental Medicine

- Not only the dose defines the burdening effect
- but the sum of:
  - burden
  - dose
  - multi toxicity
  - time of burdening
  - vulnerability
  - susceptibility
  - actual functionality of detoxification

There is only little notice about the individual suffering from violations by the environment

The tragedy is we deal in front of an epidemiologically confirmed increasing prevalence of illnesses linked to the environment
In our population we have a well known, epidemiological high graduated prevalence of environmental illnesses. 

15 - 30% of the population suffer from environmentally linked illnesses*, **, ***

4% - 9% of the population suffer from escalating environmentally linked illnesses like **

- MCS: Multiple Chemical Sensitivity
- CFS: Chronic Fatigue Syndrome
- FM: Fibromyalgia
- PTSD: Post Traumatic Stress Disorder


More than 80% overlapping symptoms by

- Multiple Chemical Sensitivity (MCS)
- Chronic Fatigue Syndrome (CFS)
- Fibromyalgia (FM)

Concerning permanent environmentally burden:

- Hypertension
- Arteriosclerosis
- Diabetes type II
- Rheumatism
- COPD
- Cancer
- Psycho-neurological diseases
  - Depression
  - Dementia
  - Alzheimer’s disease
  - Parkinson’s disease
  - ADHS / ADS

EU summit on Chronic Diseases
Brussels April, 2014

“There is a remarkable scientific evidence on an ecological relationship to chronic widespread diseases”
EU summit on Chronic Diseases
Brussels April, 2014

“Since we cannot adequately diagnose or treat these diseases, their costs to society have become staggering.”

Primary prevention is an absolute must!

Clinical Environmental Medicine
¬ 4 different kind of stressors

- physically
  - Electro – Magnetic Fields (EMF)
  - Noise
  - Radiation
  - Heat – Coldness
  - Excessive sport

- chemically – toxicly
  - Disinfectants
  - Preservatives
  - Food
  - Cloth
  - Pesticides (Antitoxing)
  - Pesticides – Fungicides
  - Mycotoxins

- biologically
  - Bacteria
  - Borreli
  - Viruses
  - Parasites
  - Molds

- psycho-socially
  - Partner
  - Parents - Children
  - Kindergarten, school
  - University
  - Working place
  - Recreation time / daily rhythm

Environmentally health impact by stressors

Influencing
- chronic inflammation
- nitrosative stress / oxidative stress
- Neuroendocrine Immune System (NEIS)
- Mitochondria function
- Depletion of micronutrients
Why do have environmentally linked illnesses nearly no awareness from the scientific main stream?

1. Environmentally linked illnesses are complex, not able to be explained by the linear causal way
2. Missing basic medical knowledge, having no specific clinical practical environmental medical training
3. Therefore fixing on psychiatric or psychosomatic diagnoses too fast and too early
RKI-MCS-Study 2002 Berlin scientifically proofs:

- MCS complaints have to be seen similar to severe heart diseases
- MCS is not a psychosomatic illness!

At first the good message: You are not hypochondriac.

Why do have environmentally linked illnesses nearly no awareness from the scientific main stream?

1. Environmentally linked illnesses are complex
2. Missing basic medical knowledge having no specific clinical practical environmental medical training
3. Therefore fixing on psychiatric or psychosomatic diagnoses too fast and too early
4. Environmental Medicine is no specific target of sponsored and by that “influenced research”
5. Missing willingness by researching scientists to cooperate with physicians daily working in clinical practical environmental medicine
Current Risk Assessment is unsatisfactory!
Due to
- insisting on the “dose – effect relationship”,
- missing assessment of accumulating long time – low dose effects,
- not being aware of multiple load with additive and multiplying effects,
- not being aware of epigenetical and genetical effects,
- disregarding
  - Neuro-Endocrine-Immune-System (NEIS)
  - individual susceptibility and vulnerability

End of the pipe strategy → long life burdening
Examples out of the last 30 years:
- Asbestos
- Tobacco smoke
- Wood preservatives, PCP, Lindan
- DDT, PCB, HCB
- Formaldehyde
- Dental amalgam
- Softeners in medical products or children´s toys

Diagnostic
Clinical Environmental Medicine
step-by-step diagnostic approach

Awareness, Anamnesis
Trigger / Stressor

1

Trigger detection
Ecotoxicology
Human Biomonitoring
Ambient Monitoring

2

Paradigm of Clinical Environmental Medicine
- Not only the dose
- defines the biotesting effect
- but the set of
- source
- route
- cell locality
- type of targeting
- specificity
- temporal dimension of detection

3

Ecotoxicology
Trigger detection

- Human biomonitoring of burden
  - Direct proof, if possible
  - e. c. lipophilic toxins
  - e. c. heavy metals
  - Indirect proof by metabolism
    - e. c. solvents
    - e. c. Pyrethroides
    - e. c. heavy metals
- Ambient-Monitoring

Clinical Environmental Medicine
step-by-step diagnostic approach

Awareness, Anamnesis
Trigger / Stressor

1

Trigger detection
Ecotoxicology
Human Biomonitoring
Ambient Monitoring

2

Effect Monitoring
Immunology
Endocrinology
Metabolism
Mitochondria

3

Paradigm of Clinical Environmental Medicine
- Not only the dose
- defines the biotesting effect
- but the set of
- source
- route
- cell locality
- type of targeting
- specificity
- temporal dimension of detection
Effect monitoring

- NEIS (Neuroendocrine Immune System)
- Neurotransmitter
- Axis: Pituitary – Thyroid - Suprarenal capsule
- Immunology (Allergy / Intolerance)

Immunological Diagnostic

Allergy

- In vivo:
  - Prick-
  - Intracutaneous Test,
  - Lymphocyte Transformation Test (LTT)
  - Provocations Test
- In vitro:
  - IgE, specific Antibody,
  - Leukotriene-Release-Test,
  - Basophile Degranulation Test (BDT)

Immunological Diagnostic

Immunology

- Autoantibody
- Lymphocyte-Transformation-Test (LTT)
- Effectors - cytokine
- Cytokine
- Circulating immune complex
- Lymphocyte-Subpopulations
Functionality of Metabolism

• oxidative and nitrosative stress
• mitochondrial dysfunction
• Other Inflammation
• Induction of Autoimmune Processes

Clinical Environmental Medicine
step-by-step diagnostic approach

Gut, GALT

- Coeliac disease
- Lactose-Intolerance
- Fructose-Malabsorption
- Food – Allergy
- Food-Intolerance
Gut dysbiosis

Stress
Clinical Environmental Medicine
step-by-step diagnostic approach

Awareness, Anamnese, Trigger / Stressor

Ecotoxicology, Human Biomonitoring, Ambient Monitoring

Effect Monitoring, Immunology, Endocrinology, Metabolism, Mitochondria

Micronutrients, Nutrition, MALT / GALT, Genetic Polymorphism

Paradigm of Clinical Environmental Medicine
- Not only the dose
defines the burdening effect
- Intact cell
- Cell death
- Disability
- Neurotoxicity
- Cancer
- Mutual functionality of detoxification

Genetic Polymorphism
Metabolism of pharmaceutical products and toxically burden

Phase I
CYP2E1, CYP2D6, CYP2C19, CYP2C9, CYP2B6, CYP2A6, CYP1B1, CYP1A1/2, etc.

Epoxid Hydrolasen, Esterasen/Amidasen, NQO1, DPD, ADH, ALDH

E. Schnakenberg, Institut für Pharmakogenetik und Genetische Disposition, www.ipgd.org
Clinical Environmental Medicine Therapy

Trust me
I am a doctor
Clinical Environmental Medicine Therapy

- Elimination / Minimization of stressors
- Stop of inflammation by supplementing micronutrients
  - enzymes,
  - minerals
  - Vitamins
- Optimizing dysfunction of neurotransmitter
- Mitochondrial treatment
- Detoxification
  - of metals by Chelat-Therapy
  - of lipophilic toxins by physical therapy
- Optimizing diet
- Treatment of gut dysfunction

Clinical Environmental Medicine 3 steps in therapy

1. Awareness and avoidance / minimization of stressor
2. Treatment of Symptoms and Optimizing of Metabolism and Function
   a. Chronic Inflammation
   b. Pain (FM)
   c. Exhaustion (CFS)
   d. Chemical Hypersensitivity (MCS)
   e. Sensitisation / Intolerance
3. Individual Detoxification

Complex therapy

3. Individual Detoxification of
   - metals
     ➢ dentistry
     ➢ alloplastic material by surgery
     ➢ Incorporated
       ➢ Ingestive
       ➢ Inhalative
       ➢ traumatically
   - lipophilic toxins
     ➢ wood preservatives
     ➢ solvents
     ➢ flame retardants
     ➢ softeners
Evaluation of an approach to treat toxically loaded persons: A controlled therapeutically study

Environental Medicine ambulant physical therapy for MCS patients

First MCS therapy study being: prospective randomized blinded controlled

Intervention protocol weekly schedule with:

- 3 active days - Monday, Wednesday, Friday
  - exhaustive physical exercise,
  - hyperthermia (sauna or “hyperthermia bank”),
  - massage, lymph drainage,
  - relaxation therapy and
  - micronutrients, vitamin and mineral supplementation.

- 2 passive days - Tuesday and Thursday
  - intensive psychic and somatic relaxation exercises like progressive muscle relaxation according to Jacobson,
  - breathing therapy,
  - liver and loam compresses

Experimental Group vs. Waiting Group

Effect Size

BL: Complaint List
ADS: Depression Scale
SF-36: Somatic Index
SF-36: Psychic Index
Trail-Making Test
D2: Koncentration
Word Reproduction: Level
Word Reproduction: Speed
PCB 138
PCB 153
PCB 180
HCB
DDT 4.4
DDE 4.4

Using the complex therapeutic regime

patients usually recover slowly but consequently

S.; Michael, 5 years, male

• SYMPTOMS:
  – Frequent infections of the respiratory tract, chronic ear infections leading to several operations of the upper airways and ears.
  – Psychological development disturbance leading to inability of enrolment in elementary school.

• risk factor:
  – Indoor pollution in kindergarten and at home.
  • Wood preservatives:
    – Pentachlorophenol, Lindane, Formaldehyde
S.; Michael, 5 years, male

• Investigation:
  – Blood samples:
    Pentachlorophenol  25 000 ng/l (75 000)
    Lindane  100 ng/l (120)

• Ambient Investigation:
  – in the kindergarten: corresponding high level in the wood of the wall inside the rooms:
    Pentachlorophenol  >3000 mg/kg (5)
    Lindane  > 280 mg/kg (1)
  – Additional at home:
    • corresponding contamination by the same toxins and
    • chemical burden on a high level
      by formaldehyde  > 0,4 ppm (0,1)

- Kindergarten strictly forbidden
- intensive restoration of home immediately
- school enrolment after 4 month possible
- further development rather normal
- studying and self-employment as an architect
- Mother developed MCS
  needing constantly medical care
Lesson learned:

95 Percentile is only a statistical value

No marker for illness, as Toxicology wants us to believe

Burdening by multiple stressors

Leading into multisystem illnesses

A. B. ♀ 28 J.
Diagnose Multiple Sklerose

- a young lady, age 28, just passed final examination at university for communication design
- moved with her boyfriend into two rooms of a new apartment sharing community
- apartment renovated directly before
  - clean and comfortable
  - life was ok, friend, job, home
- two month later paresthesia started in both arms interpreted as vertebral column problems
Guideline Multiple Sclerosis
Encephalomyelitis disseminata

- MS is the most frequent neurological illness occurring in young adults, which leads to permanent invalidity
- The clear differential diagnosing differentiation towards similar clinical pictures like Neuromyelitis optica, Collagenosis, Borreliosis, Sarcoidosis, cerebrovascular and metabolic diseases attains ongoing relevance
Guideline Multiple Sclerosis
Encephalomyelitis disseminata

The newest diagnose criteria explicit stress,

- that the diagnose MS should defined only,
  if the demonstrated neurological symptoms

  Could not be explained better
  by something else than MS

(Polman et al. 2005, Polman et al. 2011).

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A. B. ♀ 28 J.
Diagnose Multiple Sklerose

Clinical Environmental Medicine Anamneses:

- former burden by wood preservatives in
  childhood home and kindergarten
- long time burden by heavy metals mercury from
dental amalgam included
- in spite of a well known allergy Type  IV towards
  Nickel → Ten years before supplied with nickel
  containing dental bracelets

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A. B. ♀ 28 J.
Diagnose Multiple Sklerose

Clinical Environmental Medicine Anamneses:

- during studying job in a market garden
  → permanent contact wit biozides
  → eczema spreading from the hands to arm beds
to the whole body forcing to quit the job
- long time contact with glue and plastic materials
  in the courses of studies followed by eczema at
  hands and surround the eyes
- toxic nano-particles long time contacts at working
  place by toner from laser printer and scanner
Clinical Environmental Medicine Anamneses:

- leaving old living rooms she found extensive mould in bedroom
- at the wall behind the cupboards
- under the bed
- bottom side of the mattresses

A. B. ♀ 28 J.
Diagnose Multiple Sklerose

- Still acute borreliosis
- Severe burden by heavy metals
  - Lead
  - Copper
  - Nickel
  - Mercury
  - Palladium
  - Tin

Inside new livingrooms:
- Pyrethroids
- Lindane
- Dichlofluanid

Reference:
- Lindane 1mg/kg
- Permethrin 1mg/Kg
- Vitamin D- und B2- as well as B12-Depletion
  - functional disorders in detoxification metabolism

- Genetic:
  Polymorphism of detoxification enzymes
  Urgently needed for detoxification metabolism:
  - no speediness
  - not comprehensive

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**A. B. ♀ 28 J.**

Diagnose Multiple Sklerose

**Laboratory**

- Vitamin D- und B2- as well as B12-Depletion
  - functional disorders in detoxification metabolism

- Genetic:
  Polymorphism of detoxification enzymes
  Urgently needed for detoxification metabolism:
  - no speediness
  - not comprehensive

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**Conclusion:**

- not completely detoxified pollutants are deposed into an interim depot
  - fatty tissue
  - nerve tissue

The circle closes!

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**Guideline Multiple Sclerosis Encephalomyelitis disseminata**

**Diagnose**

- Classic diagnose basis on anamneses (hints of already happened neurological events in the past),
- as well as clinical and paraclinical proof of temporal and regional dissemination
- excluding other causation
Five month treatment

- Infusions with micronutrients for stabilizing oxidative and nitrosative stress
- Therapy of borreliosis
- Optimizing metabolism
- Physical detoxification - strategies
  - Lipophilic Toxins
  - heavy metals

A. B. ♀ 28 J.
Diagnose Multiple Sklerose

In Comparison to the last MRT
1. Improving
2. Regredience of former Pathology
3. No pathological Contrast Medium Enhancer
Therapy results

Totally disappeared:
- ascending paresthesia of the legs
- neuro-muscular disorders of the hands
- hearing disorders
- fatigue
- drowsiness
- dizziness
- concentration disfunction
Additional Case

Attention trap! Very often ignored!

- an apparently reactive psychosomatic illness
- mostly is not triggered alone by psycho-social stressors

Attention trap! Very often ignored!

If in the following case doctors based their diagnose and therapy strategy exclusively on psychosomatic aspects:

- toxic and biological stressors had continued health burdening on and on
- healing processes had been impossible,
- worsening of health had been certain.
Attention trap!
Partner of the young lady
- immediately with the confrontation of the life perspective changing MS-diagnose of his girlfriend he fell into a severe deep depression
- unemployment
- Paresthesia of periphery
- Concentration dysfunction
- sleeping disturbances
- had age
- constantly severe drowsiness

Attention trap!
Partner of the young lady
- Neurologist diagnosed on the base of the case history without any other investigation a reactive depression
- Neuroleptics
- no therapeutically benefit at all

Attention trap!
Clinical Environmental Medicine Anamnesis
- Mould and toxic burden in both home (past and present)
- Burden by heavy metals out of occupational areas
  - Nickel
  - lead
  - Arsenic
  - mercury
- toxic acute burden
  - Pyrethroides
  - Lindane
  - Dichlofluanid
Attention trap!
Result after 5 month detoxifying therapy

- Depression gone very quickly
- No had age any more
- Concentration came back totally
- No paresthesia any more
- Normal sleep
- Slowly fading down dizziness and drowsiness
- Back to work
- After 1 year no complains any more!

Without the awareness and knowledge of environmentally associated illnesses and the multiple trigger, these two people had in our on “mainstream science” orientated and evidence based medicine

No Chance!