

OUTLINE

MULTIPLE CHEMICAL SENSITIVITY

Objective: To provide an overview of the phenomenon of the entity popularly known as multiple chemical sensitivity (MCS). To review its epidemiology, possible mechanisms, and treatment methods.

Increasing recognition of this problem or phenomenon. Affects the civil courts as well as the Workers Compensation system. Fair Housing act and HUD as well as the ADA favor special accommodations for such individuals. Most other Federal agencies do not recognize the entity. DOD concludes that some Persian War syndromes may be a result of MCS. Debated. EPA, ATSDR, NIOSH and OSHA all interested in this problem. Some cosponsor workshops regarding MCS.

Biologic Effects of Low Level Exposures(BELLE) workshops and theories are more popular.

Definition: An acquired disorder characterized by recurrent symptoms, referable to multiple organ systems occurring in response to many chemically unrelated compounds at doses far below those established in the general population to cause harmful effects. No simple widely accepted test of physiological function can be shown to correlate with the symptoms.

I Epidemiology -

- a. Cullen (Yale) - low incidence - 16% of 49 cases outside workplace. 46% occurred in service industries such as education and health care, 34% related to indoor air pollution. MCS cases are younger and more likely female than other occupational disease cases.
- b. Mooser -similar findings
- c. Ross - similar findings but noted that incidence is higher.
- d. Bell - 637 subjects given questionnaire. 60% report adverse reactions to 5 or more chemicals.
5. Kipen (New Jersey School of Medicine)- no information regarding prevalence or incidence.
6. Tollisen - reviews need for specific protocol and case definition.

II History

Pro

- a. Randolph - 1954.- Used a pre IgE definition of altered reactivity (Von Pirquet as well as the General Stress Theory (Selye)
- b. Dickey -Clinical Ecology 1970
- c. Rae - 4 volumes on chemical sensitivity 1995-96

Con

- a. California Medical Association Scientific Task Force 1986
- b. American Academy of Allergy and Immunology Position Statement-1981 and 1986
- c. American College of Physicians 1989
- d. Council of Scientific Affairs. AMA 1992
- e. Black AMA 1990

III Theories of pathogenesis

- a. Immunologic/ allergic -
 1. Autointoxication -
 2. Chemicals accumulate. total load impairs immunity.
 3. Food polypeptides - intestinal permeability altered.
 4. Candida prevalent and contributes to protean symptoms.

5. High incidence of associated atopy in this population 70% Cordas
6. High Incidence of associated psychopathology 75% Cordas.

Allergy to chemical systemically is not very common. OSHA recognizes Captafol (an herbicide), Cobalt, Isophorone diisocyanate, Phenothiazine, Phenyl glycidyl ether, plicatic acid, subtilins, Toluene-2,4 diisocyanates are potential systemic sensitizers. Pyrethrins can also rarely produce systemic responses. 3000 compounds cause contact dermatitis. allergic type
300 compounds approximate associated with allergic asthma - occupational type. Foods , pharmaceuticals, food additives, can produce idiosyncratic as well as atopic responses.
Candida allergy has been documented in regard to skin and asthmatic problems.

b. Toxicologic theory

1. Ecologists measure a portion of total load with chemical panels in the blood.
2. Measurements are in ppb or ng/ml. No national norms. No controls
3. Wadell reviews the deficit in the theory (see attachment)
4. No basis for a toxicologic mechanism yet.
5. Theories of genetic deficiencies in detoxification mechanisms, cofactor utilization (pyridoxine conversion, sulfation, cytochrome P450 subclasses etc.) have not been substantiate though this is a potential area of research.

c Psychological/Neurological

1. Psychoneurological alteration in immune responses?
2. Conditioning response?
3. Kindling effect and neuronal sensitization. (Bell)
4. Davidoff and Fogarty analysis (John Hopkins)

Conclusions: Increasingly common phenomenon. Patient needs a balanced, logical, humanistic approach with special attention toward the psychological aspects. Evaluate with a good allergic, psychologic, occupational and environmental history.

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