Multiple Chemical Sensitivities

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Multiple chemical sensitivities (MCS) is a relatively newly recognized syndrome that is seen with increasing frequency by psychiatrists, neurologists, allergists, occupational physicians as well as primary care physicians.
MCS is characterized by recurrent symptoms involving multiple organ systems (occasionally a single organ) in response to demonstrable doses of multiple chemical substances that are unrelated to each other. These reactions occur at doses far below those levels ,established by state or federal regulatory agencies, that are known to cause illness.

Interest in this field is increasing and many newer reference books in preventive medicine, occupational medicine and neurotoxicology include a discussion of this complex subject. Cullen has produced a set of diagnostic criteria for research into this field . (Table 1) Such individuals do not appear to properly function around a variety of petrochemical compounds in the workplace. Attempts to return them to the work setting without reasonable accommodation will usually result in high absenteeism, increased turnover and higher company medical expenses. There is no specific treatment for such patients, though education and avoidance methodology through industrial hygiene intervention, primary process modification, primary protective equipment, and product substitution will help reduce exposure. Appropriate ventilation is paramount in improving the vocational environment for all workers but especially for MCS (Multiple Chemical Sensitivity) patients. Sometimes modification of their avocational or vocational environment will permit a reasonably normal lifestyle. Such patients do not appear to have persistent, reproducible abnormalities of the immune system, and conventional neurological tests such as the MRI or the CAT scan are usually within normal range as is a standard neurological examination. They are not having a true allergic mechanism as the cause of their symptoms, though they may also have hereditary allergies. About 20% of the general population or 42.5 million persons in the United States are allergic.

Controversy exists regarding the cause or mechanism of this disorder as well as appropriate therapy. It is customary, in our medical community for unexplained symptoms that affect the nervous system to eventually be "dismissed " as a psychiatric disorder. Though some cases have been reported to

have odor-related panic disorders and may respond favorably to psychological or religious guidance, psychotherapy or antidepressants, a majority of a cases we have seen have adverse reactions to drugs such as antidepressants or are not appreciably benefited from their use. Psychotherapy alone has not proved beneficial for the majority of such patients, in our experience, without associated avoidance of the petrochemical compounds.

We are all aware that some individuals may have a intolerance or idiosyncrasy to drugs. The MCS patient, in many cases, appears to have an idiosyncrasy to a variety of odors which, like pharmaceuticals, are chemicals generally. Cross reactions of various chemicals are found in patch testing and it is possible that complex cross reactivity is present in such patients.

Mark Cullen, the director of the Occupational center at Yale University School of Medicine, estimates that between 2 AND 10% of the general population has this disorder . In the Occupational and environmental neurology clinic at the John Hopkins School of Medicine, 64% of patients referred for neurotoxic exposure to mixed solvents or organophosphates meet Cullen's diagnostic criteria for MCS. While such disorders may be common in such patients, especially obsessive personality disorders, depression and anxiety, it is difficult to know what condition came first, came afterward or was latent and heightened by such exposures.

Today, there is less controversy that such patients exists than in our admitted ignorance of how to truly help the individual. Most patients are ignored, improperly shuffled from one specialist to another or made more ill iatrogenically. In the court systems and Workers' Compensation systems objective evidence is generally required to substantiate medical allegations. MCS is a largely subjective disease and not included in the AMA guides (any condition). Newer diagnostic methods such as triple SPECT scanning, quantitative EEG studies, computerized posturography and brainstem evoked potentials are abnormal in a vast majority of such individuals. Subtle neuropsychological abnormalities have also been demonstrated.

When positive such testing can help offer a scientific though poorly understood objectivity to compensation proceedings. If testing of this type is within normal limits, especially in the presence of testing for personality defects, symptom magnification or malingering, non organic or functional disease should be diagnosed and treated. Some degree of secondary anxiety and depression is

common with any chronic illness and MCS patients are no exception. The presence of emotional factors per se should not rule out concurrent MCS.

A great deal of passionate bias exists in regard to this syndrome by both the opponents and protagonists. This bias results due to the facts that:

- These patients do not follow the known rules or tenants of toxicology.
- Psychiatry is the customary place to delegate confusing cases that are difficult to treat by conventional pharmacological methods
- This entity is not found in the ICD codes and is not generally recognized by Medicare or insurance providers.
- This entity is not taught to physicians in usual and customary educational seminars or at a medical school level.

SUMMARY

There is little doubt that the entity MCS exists. It may represent a residual neurotoxic metabolic abnormality which will be better elucidated by future research. At times there appears to be a hereditary or congenital propensity for MCS. Psychologic problems are often present and in some cases may be primary. Special concern should arise when litigation or compensation is considered, as these events are known to "color" the clinical picture. Whatever the mechanism, a majority of these patient's cannot and do not function well at the workplace.

Appropriate rapport and understanding, education the patient about what we know and don't know about this illness, Treating the physical and emotional issues of the whole person, avoidance of known offending compounds, behavioral desensitization, and the creation of a wellness model appear to be the most rewarding methods to help patients with MCS.

CULLEN'S CRITERIA

(FOR THE INVESTIGATION OF MULTIPLE CHEMICAL SENSITIVITY)

1. Symptoms begin after a more typical occupational or environmental disease, such as an intoxication or chemical insult. The initiating problem may have been one episode or repeated episodes, as in daily solvent intoxication.

2. Symptoms, initially often similar to those of the initiating illness, begin to occur after reexposure to lower levels of the same or related compounds.

3. Generalization of symptoms occurs such that multiple organ-system complaints are involved. Invariably these include symptoms referable to the CNS.

4. Generalization of precipitants occurs such that low levels of chemically diverse agents can elicit the response, often at levels orders of magnitude below accepted threshold limit values or guidelines.

5. Work-up of complaints fails to reveal impairment of organs that would explain the pattern or intensity of complaints.

6. Frank psychosis or systemic illness that might explain the multiorgan symptoms is absent.

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