MASS PSYCHOGENIC ILLNESS

by Robert Johnston, PharmD

Introduction
Mass psychogenic illness (MPI) is often perceived to be a toxic exposure. Also known as mass hysteria, mass sociologic or sociogenic illness or epidemic hysteria, MPI is characterized by signs and symptoms that are shared among a cohesive group. The clinical presentation often suggests exposure to a toxin or an infectious etiology but is characterized by no identifiable environmental cause. Evaluating patients and the epidemiologic investigation to identify the source of illness takes significant time and resources. The investigation is challenging because the illness is often triggered by some environmental factor: a bad smell or a rumor about a possible poisoning. In some cases there may be individuals who are truly exposed and others who perceive they have been exposed. MPI may affect normal healthy individuals.

Case Example
A group of students at a secondary school complained of non-specific symptoms of nausea, vomiting, abdominal pain, dizziness and headache that were thought to be related to consumption of a brand-name soft drink (Gallay 2002). A few days later, students at several other secondary schools began to complain about the same symptoms. Over the course of 13 days, the Belgian Poisoning Call Centre received more than 1,400 calls related to the soft drinks, 55% of whom complained of the same symptoms as described above. Chemical analysis of the soft drink at the first school revealed low concentrations of hydrogen sulfide that was not confirmed in soft drinks at the other schools. An epidemiologic investigation was launched. An analysis of the epidemiologic evidence suggested there were factors to support causal toxicity with the contaminant at the initial school, as well as some evidence for MPI. However, analysis of cases from the other schools revealed stronger evidence for MPI compared to toxicity from the soft drink. Factors believed to contribute to this small “epidemic” included its beginning after end-of-year examinations, recent elections and crises that included food poisoning anxiety, pervasive media coverage and an overwhelming response by health care authorities.

Characteristics of MPI
The diagnosis of MPI is difficult and is often a diagnosis of exclusion. Clinical findings are non-specific and there is little clinical or laboratory evidence of disease. Outbreaks of MPI are acute in onset and the clinical findings can spread rapidly among individuals. An initial trigger may be an odor and frequently the index case does have an illness. MPI is more common in women than men. A significant emergency response is often associated with spread of MPI. In many cases there is “person to person” spread of symptoms. However, in some epidemics media coverage may facilitate spread of illness.

Table 1 lists the most common symptoms associated with MPI (Boss 1997). MPI frequently includes many general symptoms associated with toxic gases or chemicals that would affect the skin, lungs and gastrointestinal tract.

“Ghostbusters” (1984), Motion picture produced by Black Rhino, Columbia Pictures, and Delphi Films.
Mass Psychogenic Illness

Patients may present with any combination of signs and symptoms. It may be difficult to separate patients who are suffering from an actual toxic exposure from those having psychogenic effects. Initially, all patients should be considered as having direct exposure to the toxin. Themes consistent with MPI include (Bartholomew 2002, Nañagas 2005, Jones NEJM 2000):

- An unusually rapid spread of and recovery from symptoms.
- Inconsistent presentation compared to normal disease progression.
- Symptoms are transient and benign with no plausible organic basis.
- Occurrence in a segregated group.
- The presence of extraordinary anxiety.
- Symptoms may be spread via line of sight, sound or oral communication.
- Spreading of symptoms occurs first with older or higher-status patients, then progresses to younger or lower-status patients.
- There is a prevalence of female patients.

Table 1: Common Symptoms of MPI

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<tr>
<th>Symptom</th>
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<tr>
<td>Nausea and vomiting</td>
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<tr>
<td>Headache</td>
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<tr>
<td>Dizziness</td>
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<tr>
<td>Abdominal Pain</td>
</tr>
<tr>
<td>Fatigue, drowsiness or weakness</td>
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<tr>
<td>Hyperventilation, anxiety</td>
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<tr>
<td>Syncope</td>
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The following example points out common elements found in the event of MPI. A “gasoline-like” smell was the reason attributed to the evacuation and closing of a Tennessee high school for over one week in November 1998 (Jones 2000 NEJM). A teacher at the school noticed the smell shortly after arriving in the morning and developed headache, dizziness, shortness of breath, and nausea shortly thereafter. She was transported by ambulance to the hospital. Children in her classroom developed symptoms and the classroom was evacuated. Other students in the school reported similar symptoms and several students requiring ambulance transport to the only emergency department (ED) in this rural area. By the end of the day, 100 people (students, staff and a family member of a student) reported to the same ED and 38 were admitted for overnight observation. No leak, spill or source of exposure was identified after investigation by local and state agencies. The school was reopened the following week and 71 people subsequently presented to the ED with symptoms that were assumed to be related to the exposure the prior week. The school was evacuated and closed a second time after which an extensive investigation was initiated by local, state and federal agencies including the Environmental Protection Agency and the Centers for Disease Control and Prevention. Again no toxic substance or source of symptoms was identified.

Investigators identified several characteristics consistent with MPI: the index case was a teacher or person of higher status, a majority (69%) of those affected were female, the origin was attributed to an odor, non-specific symptoms, and victims had a direct line of sight to the index case or cases. It was concluded that the symptoms of most, if not all, of the victims were psychogenic in nature.

Response and Treatment

The appropriate response to an outbreak involving psychogenic illness...
Mass Psychogenic Illness relies on recognizing that psychogenic illness may be involved. The index case must be looked at separately as it is unlikely to be group dynamics affecting their illness. Conversely, there may be individuals associated with MPI that also have unrelated organic illness. The approach to evaluation of patients suspected of MPI should include (Jones AFP 2000):

- Attempt to separate victims.
- Perform physical exam and pertinent laboratory testing promptly to rule out acute illness.
- Monitor for hyperventilation and administer oxygen as needed.
- Avoid or limit unnecessary procedures, health care personnel and media contact.
- Notify public health authorities to initiate an outbreak investigation.
- Ensure adequate communication among the health care team who are sharing duties for evaluation of patients.

Patient communication should include reassurance and affirmation of symptoms, discussing the role of anxiety, reassurance that long-term complications are not expected and that no toxic cause for the outbreak has been identified as is appropriate to the situation (Jones 2000 AFP). It is important to involve public health authorities early in the evaluation process. Proper information must be disseminated by public health authorities at the scene and by health care organizations through the media to minimize spread of MPI. Health care professionals and emergency services can exacerbate the public’s response by overreacting. Too many paramedics, fire engines and police at the scene may contribute to the public’s perception of the exposure (Wessely 2000). Controlling these effects requires preparation and education for emergency service personnel, health care professionals and the media.

With heightened concern for terrorist activity on U.S. soil, MPI is a condition that needs to be in the differential diagnosis for mass casualty events. The poison center can play a key role in communicating risk. Reassurance of the “worried well” may result in a reduction in unnecessary ED visits in the case of a mass casualty event.

References


Acute phosphate nephropathy and renal failure have been associated with oral sodium phosphates for bowel cleansing (e.g., Visicol, Fleet Phospho-soda). Patients at increased risk include the elderly, those with kidney disease, dehydration or decreased intravascular volume, and those using drugs that affect renal perfusion or function.

Consumers ordering prescription medications online including Ambien, Ativan, Lexapro, and Xanax have received a product containing haloperidol. Several individuals ingesting these misrepresented medications sought emergency treatment for symptoms including muscle stiffness, muscle spasms, and difficulty breathing.

Quinine drugs are associated with serious side effects, such as cardiac arrhythmias, thrombocytopenia, and severe hypersensitivity reactions. Quinine should not be used for treatment of leg cramps.

Web sites have been illegally selling “35 percent food-grade hydrogen peroxide” products for the treatment of AIDS, cancers, emphysema, and other serious diseases. This product is highly corrosive. Ingesting concentrated hydrogen peroxide can cause gastrointestinal irritation, ulceration, gas embolism, and is potentially life-threatening.

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TOXICOSLOGY TODAY www.utahpoisoncontrol.org
ABSTRACT: ETHYLENE GLYCOL POISONING


Objective: The evaluation and treatment of ethylene glycol poisoning requires extensive health care resources. The objective of this study is to describe the epidemiology, clinical effects, treatments and outcomes from ethylene glycol exposures reported to all U.S. poison centers over a five year period.

Methods: The data is collected prospectively by poison centers using a standard format to ensure data consistency and entered into the American Association of Poison Control Center’s Toxic Exposure Surveillance System (TESS) database. Cases were retrospectively identified by substance codes for “ethylene glycol” for the years 2000-2004.

Results: A total of 29,863 ethylene glycol exposures were voluntarily reported over the 5 year period. The yearly exposure rate (total TESS exposures/ethylene glycol exposures) remained constant over the study period (0.24%-0.27%). A bimodal exposure peak for age occurred at 0-5 years (3,805, 13%) and 20-49 years (15,423, 52%). The rate of evaluation in a health care facility was equal for both adults and children (32%). Intentional ingestion was more likely to result in moderate effects, major effects or death (71%) compared to unintentional ingestion (13%) (Odds ratio 16.7, 95% CI 15.2-18.4). Routes of exposure other than ingestion included inhalation (n=1,616), dermal (n=1,276) and ocular (n=956). These routes resulted in local effects only. There were no cases of metabolic acidosis or renal injury associated with these routes of exposure. The frequency of ethanol therapy decreased and fomepizole therapy increased each year in both adults and children. Fomepizole (n=361) surpassed ethanol (n=252) use in 2002. The rates of hemodialysis remained relatively constant for both age groups over the 5 years.

Conclusion: Ethylene glycol exposure frequently results in evaluation at a health care facility. Moderate and major outcomes occur more frequently with intentional ingestions but also occur in a minority of unintentional ingestions. Inhalation, dermal and ocular exposures were not associated with systemic toxicity. Fomepizole appears to be replacing ethanol as therapy but the use of hemodialysis remained constant.