BRIEF REPORTS

A new cutaneous sign of mercury poisoning?

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Chronic mercury poisoning is becoming a health concern because of extensive pollution of water and fish, and the increasing consumption of fish in the human diet. Mercury is extremely toxic to the body, especially the central nervous system, but diagnosis is difficult because of the lack of specific signs. A total of 11 patients were observed to have a nonpruritic or mildly pruritic discreet papular and papulovesicular eruption that correlated with high blood mercury levels. The mercury evidently came from increased seafood consumption. All of the patients improved when they were placed on either a seafood-free diet or chelation therapy. Physicians should suspect mercury poisoning in patients who eat a high-seafood diet who present with an asymptomatic or mildly pruritic papular or papulovesicular eruption. (J Am Acad Dermatol 2003;49:1109-11.)

The diagnosis of mercury poisoning is very difficult as a result of the insidious nature of the disease and the lack of specific signs. I have recently seen 11 patients with an eruption characterized by nonpruritic or mildly pruritic discreet small (1-2 mm) flesh-colored or slightly erythematous papules and papulovesicles that correlated with blood mercury levels and responded well to the lowering of their blood mercury.

RESULTS

The patients ranged in age from 25 to 70 years and the duration of the eruption before diagnosis and the initiation of treatment was from 1 week to 2 years (Table I). Of the patients, 2 had noncutaneous symptoms including dizziness, memory loss, and gastrointestinal bleeding. Blood mercury levels before treatment ranged from 6 to 19 μg/L with a mean of 10 μg/L (normal: <10 μg/L). Prior treatments included topical steroids (9 patients), oral steroids (4 patients), antihistamines (2 patients), and cyclosporine (1 patient), all without success. None of the patients had a personal or family history of atopy (asthma, hay fever, or atopic dermatitis); none had a history of either industrial or incidental exposure to mercury other than seafood, or a history of allergic reactions to any metals. In all, 8 patients had mild pruritus and none had pain.

Physical examination disclosed discrete, flesh-colored or slightly erythematous papules and papulovesicles (1-2 mm) of the palms in all patients (Fig 1), the soles in 1 patient, and the arms (Fig 2) and trunk in 3 patients. Excoriations and crusting were absent.

Biopsies were performed on 9 patients and pathologic examination revealed spongiosis, and a perivascular and diffuse lymphocytic infiltrate. Immunohistochemical studies showed that the cells in the infiltrate stained positively for CD3, CD4, CD5, CD7, and CD8 with negative staining for CD20, consistent with a mixed T-cell infiltrate composed of both helper and suppressor T cells. Direct immunofluorescence showed focal antinuclear staining and indirect immunofluorescence revealed the presence...
of basal cell cytoplasm antibodies, consistent with damage to basal cells and suggesting damage by a cytotoxic agent. Antibodies to DNA, Sm, nuclear RNP, Ro (SS-A), La (SS-B), Jo-1, Scl-70, histone, or β2 glycoproteins were not found. Immunoﬂuorescent studies were performed by Beutner Labs, Buffalo, NY.

All patients were treated with a seafood-free diet and 7 patients were treated with chelation therapy with succimer (2, 3-dimercaptosuccinic acid) (200 to 300 mg, 3 times a day). Treatment duration lasted from 1 to 6 months with serum mercury levels, complete blood cell count, and chemistry proﬁle checked every 3 to 4 weeks. All patients responded with a lowering of their blood mercury levels and clearing of the eruption. Treatment was well tolerated with no adverse reactions reported. No concomitant treatment was included.

DISCUSSION

Mercury in all forms is toxic to the body and the signs and symptoms depend on the type of exposure. Elemental mercury, as found in thermometers, lamps, and dental amalgams, is responsible for the least common form of poisoning because it is poorly absorbed from the gastrointestinal tract. However, elemental mercury can vaporize at room temperature and be absorbed through alveoli into red blood cells where it can be converted to mercuric ions. These are toxic to the central nervous system. Inorganic mercury, found in lamps, wood preservatives, disinfectants, explosives, inks, cosmetics, and various chemical products, is absorbed both orally and dermally, and is usually responsible for acute mercury poisoning with central nervous system symptoms. Skin signs in acute inorganic mercury poisoning are rare but may include acrodynia (pink disease), especially in children, and stomatitis. Organic mercury is found as thimerosal, a common medical preserver,
icated that mercury toxicity does not occur unless blood levels exceed 15 $\mu$g/L but this study suggests that toxicity may occur at levels as low as 6 $\mu$g/L or less.8 Mercury toxicity may be more prevalent than has previously been recognized. A nonpruritic or mildly pruritic papular and papulovesicular eruption, as described here, may be a new cutaneous marker of mercury toxicity.

REFERENCES
4. FDA Consumer Advisory. An important message for pregnant women and women of childbearing age who may become pregnant about the risks of mercury in fish. FDA Newsletter March 2001.

Table I. Types and duration of eruption, associated findings, serum mercury levels, treatment, and response in 11 patients

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Eruption/Distribution</th>
<th>Duration</th>
<th>Associated findings</th>
<th>Serum mercury ($/L)</th>
<th>Tx</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Papules/palms</td>
<td>1 mo</td>
<td>None</td>
<td>9</td>
<td>Diet*</td>
<td>Clearing</td>
</tr>
<tr>
<td>2</td>
<td>Papules and papulovesicles/palms</td>
<td>1 mo</td>
<td>Dizziness/rectal bleeding</td>
<td>19</td>
<td>Diet/chelation†</td>
<td>Clearing</td>
</tr>
<tr>
<td>3</td>
<td>Papules and papulovesicles/palms</td>
<td>6 mo</td>
<td>Dizziness/memory loss</td>
<td>11</td>
<td>Diet</td>
<td>Clearing</td>
</tr>
<tr>
<td>4</td>
<td>Papules and papulovesicles/palms</td>
<td>2 mo</td>
<td>None</td>
<td>11</td>
<td>Diet</td>
<td>Clearing</td>
</tr>
<tr>
<td>5</td>
<td>Papules/palms</td>
<td>2 mo</td>
<td>None</td>
<td>6</td>
<td>Diet</td>
<td>Clearing</td>
</tr>
<tr>
<td>6</td>
<td>Papules/palms</td>
<td>1 y</td>
<td>None</td>
<td>9</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
<tr>
<td>7</td>
<td>Papules/palms</td>
<td>1 y</td>
<td>Macular degeneration</td>
<td>10</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
<tr>
<td>8</td>
<td>Papules and papulovesicles/palms soles</td>
<td>2 y</td>
<td>None</td>
<td>18</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
<tr>
<td>9</td>
<td>Papules and papulovesicles/palms, arms, chest, abdomen, and back</td>
<td>1 mo</td>
<td>None</td>
<td>11</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
<tr>
<td>10</td>
<td>Papules/palms, arms, legs, chest, abdomen, and back</td>
<td>2 wk</td>
<td>None</td>
<td>14</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
<tr>
<td>11</td>
<td>Papules/palms, arms, legs, chest, abdomen, and back</td>
<td>1 wk</td>
<td>None</td>
<td>7</td>
<td>Diet/chelation</td>
<td>Clearing</td>
</tr>
</tbody>
</table>

Tx, Treatment.
*No seafood.
†Chelation with succimer (2,3-dimercaptosuccinic acid).


cated that mercury toxicity does not occur unless blood levels exceed 15 $\mu$g/L but this study suggests that toxicity may occur at levels as low as 6 $\mu$g/L or less.8 Mercury toxicity may be more prevalent than has previously been recognized. A nonpruritic or mildly pruritic papular and papulovesicular eruption, as described here, may be a new cutaneous marker of mercury toxicity.

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