

## Case Reports

### SELF-INDUCED FOREIGN BODY GRANULOMAS DUE TO INJECTION OF ELEMENTAL MERCURY

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#### ABSTRACT

A 24-year-old girl injected approximately 1 ml of elemental mercury from a few broken thermometers to her right cubital fossa. It led to the formation of a tumoral lesion which was erythematous, lobulated, painful, with secretory sinuses in the injected area. Biopsy showed foreign body granulomas with metallic mercury that appeared as dark opaque globules. X-rays showed metallic densities in the soft tissue. General condition of the patient was good, and there was no evidence of systemic mercury poisoning. The lesion was removed surgically, and the surgical site was covered with skin graft because of the extent and depth of the lesion. This is the first report of self-induced mercury injection in Iran.

*MJIRI, Vol. 7, No. 3, 205-207, 1993.*

#### INTRODUCTION

Self-induced or cutaneous artefacts are lesions produced by the patients. The lesions are generally distributed on parts easily reached by the hands. The subjects are psychiatrically impaired and the skin is a frequent target for the release of emotional tension. Young women are more commonly affected than men.

Cutaneous mercury granuloma is caused either by a broken thermometer,<sup>1-3</sup> or self-induced injection of elemental mercury.<sup>2,4,5</sup> In all cases cutaneous reaction is characterized first by local tenderness and inflammation and then followed by foreign body granuloma with abscess formation. Rarely, pulmonary embolism after injection of elemental mercury has been reported due to release of mercury into the vascular system.<sup>2,5,6</sup> Mercury levels can be measured in the blood and urine. Elemental mercury can oxidate to form toxic mercuric salts,<sup>5,6</sup> that are a potential hazard. Systemic toxicity resulting in permanent damage to the renal tubules and CNS involvement may occur. Other complications have also been reported. The course is unpredictable and sometimes fatal.<sup>6,7</sup>

#### CASE REPORT

A 24-year-old girl presented with an erythematous, firm, lobulated, and tender mass with sinus discharge at the right cubital fossa (Fig. 1,2). She reported a tender inflamed lesion at the same site one month before. Her physician had sent her for laboratory examinations with the impression of granulomatous lesions, most probably fungal infection and cutaneous leishmaniasis examinations, which were negative for both indirect smear and culture. Bacteriological examination was also negative. X-rays of the lesion disclosed radiopaque densities in the soft tissue (Fig. 3).

After we saw the results of lab investigations and x-rays, we examined discharge of the lesion with the impression of heavy metal foreign body and noted shiny mercury-like particles that joined together and formed a complete mercury granule. Although the patient confessed that it was mercury, she first denied injecting mercury on her own. But following informing her repeatedly about the hazards of poisoning with mercury, she reported injection of 1 ml of mercury to her right cubital fossa the site of which after one week led

## Foreign Body Granuloma due to Mercury



**Fig 1.** Patient's right arm showing erythematous, firm lobulated mass.



**Fig 2.** Lobulated mass with sinusal discharge.



**Fig 3.** X rays of patient's right arm showing metallic density in soft tissues.



**Fig 4.** The lesion was excised completely.

to an erythematous inflamed lesion. Laboratory tests including CBC, ESR, fasting blood sugar, BUN, urea, urinalysis, creatinine clearance, 24-hour urine protein, and liver function tests were all within normal limits.

Chest x-ray was normal without any evidence of metallic densities in both lung fields. The patient was referred to the plastic surgery department where she was operated and the lesion was excised completely (Fig. 4). X-ray following surgery was negative for particles of mercury. Skin graft was also performed due to the extent and depth of the lesion (Fig. 5). Pathological study of the excised tissue showed foreign body granulomas with giant cell and dark opaque globules. After surgery, measurement of mercury level in urine and blood was within normal limits. During the five-month follow-up after initial presentation, general condition of the patient was good and investigations were normal.

## DISCUSSION

Elemental mercury foreign body granulomas may be produced either by a broken thermometer,<sup>1,3</sup> or by self-injection of metallic mercury by the patient,<sup>2,4,5</sup> especially by the emotionally disturbed patients. One to two weeks after injection, acute local reaction occurs as erythematous inflammation that gradually leads to chronic erythematous tender foreign body granulomas with abscess formation.<sup>2,3,5</sup>

Elemental mercury may be released into the vascular system from the skin lesion and may cause pulmonary embolism or distal small vascular occlusion.<sup>2,5,6</sup>

It is believed that elemental mercury can oxidate to form toxic mercuric salts.<sup>5,7</sup> Systemic toxicity may involve renal tubules, CNS, lungs, and GI tract which may in a few cases lead to a fatal outcome. After confirmation of the elemental mercury granuloma by x-ray and histopathologic examination, measurement of the mercury level in blood and urine and investigation of the kidneys, lungs, CNS,



Fig 5. Graft was also done due to extent and depth of the lesion.

and GI tract will be needed to disclose systemic toxicity.

The general principles of treatment include:

1. Prompt total surgical excision of the lesion for mercuric particles under fluoroscopic guidance.
2. Administration of chelating agents like D-penicillamine if there is any evidence of systemic toxicity.
3. Psychiatric consultation in self-induced cases.

#### ACKNOWLEDGMENT

We would like to express our sincere gratitude to our colleagues N. Hejazi, M.D. and Z. Naraghi, M.D., from the Department of Pathology, and M. Sadri, M.D., from the Laboratory Department, Razi Hospital, and A. Gharib, Ph.D. from the Atomic Energy Organization of Iran.

#### REFERENCES

1. Rachman R: Soft tissue injury by mercury from a broken thermometer. *Am J Clin Pathol* 61:
2. Lupton GP, et al: *Acad Dermatol* 12:
3. Purnima S, et al: thermometer. *J Am Acad Dermatol*, 11(2):
4. Krohn IT, et al: *JAMA* 243: 548-9, 1980.
5. Lund KA, Treadwell P: granulomas. *Int J Dermatol* 353-4, 1992.
6. Schulz E, Beskind H: mercury. *J Pediatr* 57:
7. Gerstner HB, Hulf JE: *Toxicol Environ Health* 2: