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CASE REPORT ON "MERCURY TOXICITY"

Radiology

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ABSTRACT

Mercury poisoning is a type of heavy metal poisoning due to exposure to mercury. Symptoms normally includes muscle weakness, poor coordination ,numbness in hands and feet ,skin rashes etc Patients in such cases presents normally with late symptoms and such cases are very rarely found in day to day practice . Here we present a case of 16 years old female who presented with low grade fever, breathlessness and chest pain and on further investigation deposits noted in chest xray and forearm xray and later multiple deposits found on CT scan done

KEYWORDS:

INTRODUCTION

Throughout the centuries, there have been several incidents of mercury toxicity. As early as 1500 B.C we know that the Egyptians used mercury, as it was found in their tombs. Men may encounter mercury in an inorganic (elemental or mercuric salt) or an organic form. All three are toxic. Elemental mercury is used in Dental amalgams, thermometers and sphygmomanometers. We report one such case that we reported in New Civil Hospital,Surat.

Case Report :

Sixteen year old female was hospitalised with 02 days history of low grade fever, breathlessness and chest pain. She had no other complaints and denied history of any major illness in the past. Clinical examination did not reveal any abnormality. Haemogram, urine analysis and metabolic profile were normal. Chest radiograph revealed distinct metallic density opacities in all zones bilaterally (Fig 1). Xray KUB shows diffuse dense radiopacities in pelvic cavity .CT scan thorax and abdomen showed small dense radiopacities are noted in both kidney ,bowel, liver and lungs and additional mediastinal metallic opacities (Fig 3). A week after admission he developed an abscess over the right forearm that did not respond to antibiotics, and hence incision and drainage was done which drained pus mixed with metallic mercury globules (1.5 ml weighing 20 g).it was found out later after detailed history that patient had history of tooth filling few years back which contains mercury . This clinched the diagnosis of elemental mercury poisoning. Retrospectively the patient was evaluated. She denied any history suggestive of CNS involvement (hyperactivity, insomnia, tremors, loss of memory, abnormal behaviour, ataxia), GI involvement (anorexia, weight loss, diarrhoea, vomiting), ocular or auditory involvement.She was offered chelation therapy with Capsule D-penicillamine, to begin with 250 mg b.i.d. an hour after meals, which was increased to 1 gm/day in divided doses for 2 weeks. The course was repeated and post treatment radiographs revealed scattering of metallic deposits

Discussion

For centuries several incidents of mercury toxicity have been reported. Some recent exposures include Minamata Bay in Japan (1960), mercury contaminated fish in Canada and methylmercury treated grain in Iraq (1960 and 1970). Mercury is the only metal that is liquid at room temperature & weighs 13.55g per ml. It is foundin both organic and inorganic forms. The inorganic form can be further divided into elemental mercury and mercuric salts. All forms are toxic and manifestations depend on the nature of exposure, the intensity of exposure and the chemical form [3,4]. Mercury poisoning can result from vapour inhalation, ingestion, injection and absorption through the skin. Our case had mercury toxicity due to inhalation of elemental mercury vapours. It is found in liquid form and easily vaporises at room temperature and is well absorbed (80%) through inhalation. Sources of toxicity include barometers, batteries, bronzing, calibration instruments, dental amalgams, electro-plating, finger printing products, mercury lamps, and jewellary industry, paints, silver and gold production and thermometers. Its lipid soluble property allows for easy passage through alveoli into the blood stream and red blood cells. Once inhaled, elemental mercury is mostly converted to an inorganic divalent or mercuric form by catalase in the erythrocytes. This inorganic component has poor lipid solubility, limited permeability to the blood brain barrier and is excreted in faeces. But the nonoxidised component accounts for CNS toxicity, where it is ionized and trapped. Elemental mercury is not well absorbed by GI tract and therefore, when ingested, is only mildly toxic. Acute exposure to inhaled elemental mercury can lead to fever chills, dyspnea, metallic taste, pleuritic chest pain, stomatitis and lethargy. Recovery is usually without sequelae but pulmonary complications like pneumatocoele, interstitial fibrosis, pneumothorax, pneumomediastinum and fatal ARDS has been report of elemental mercury and ingestion of caustic inorganic mercury. The next step is to remove the contaminated clothing and copious irrigation of the exposed skin. Emesis is not induced for the caustic inorganic form, but for the organic ingestion gastric lavage with protein containing solutions (e.g. milk, egg whites) is recommended especially when mercury is visible in the abdominal radiographs. Activated charcoal is indicated for GI decontamination, as it will bind to both organic and inorganic mercury to some extent. Use chelating agents if the patient is symptomatic, if systemic absorption is anticipated or if increased blood or urine levels are present. British Anti Lewisite (BAL) is used only in acute inorganic ingestion. D-penicillamine forms a complex with mercury and is excreted in urine and can be used if there is no renal failure. A safer drug 2,3 - dimercaptosuccinic acid (DMSA) is useful in both inorganic and organic mercurials. Formation of abscesses and mercury gradually ulcerating out from the epidermis has been reported in the past. She is under regular follow-up and till now has no toxic manifestations [6]. Chronic exposure leads to renal failure dementia and acrodynia, tremors, gingivitis and erythrism, tunnel vision and ataxia.

Management Supportive care begins with ABCs (airway, breathing and circulation), especially when dealing with inhalation

Conclusion ;- Mercury poisoning is a rare type of disease that is seldom found in general population and if diagnosed in time can be treated successfully .past history of the patient should be taken carefully to rule out exposure to anything else . Medicinal history should be taken carefully to rule out any bias .

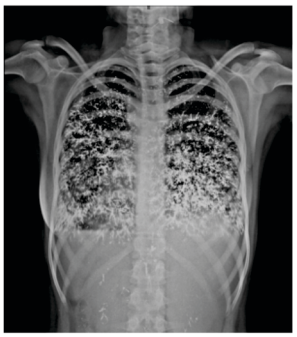

Fig.1 Chest radiograph showing distinct metallic density opacities bilaterally

Fig 2
Xray KUB shows distinct metallic density opacities

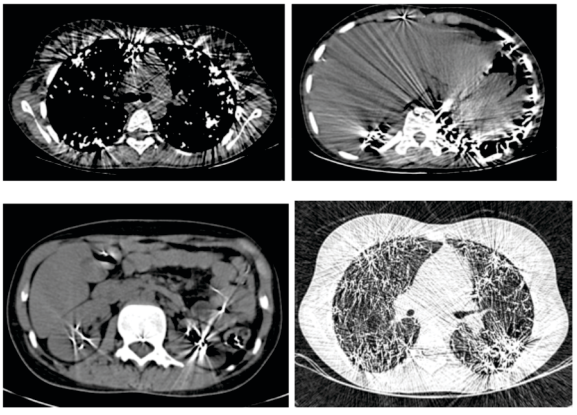

Fig. 3 : CT scan thorax revealing pulmonary parenchymal and mediastinal metallic opacities

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