

# Lead poisoning in a 16-year-old girl

a case report and a review of the literature (CARE compliant)

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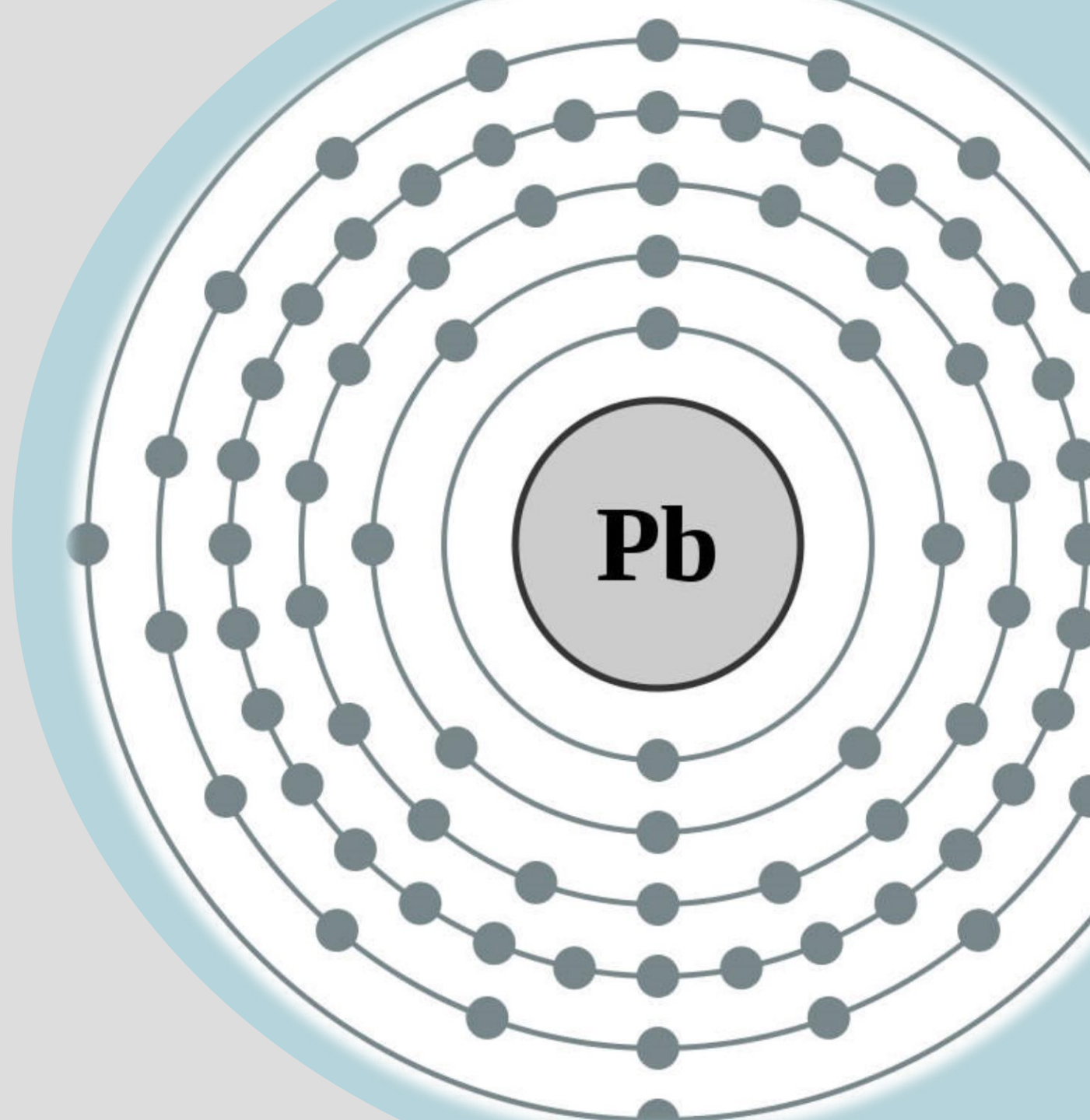
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# 1

## Introduction



# Introduction

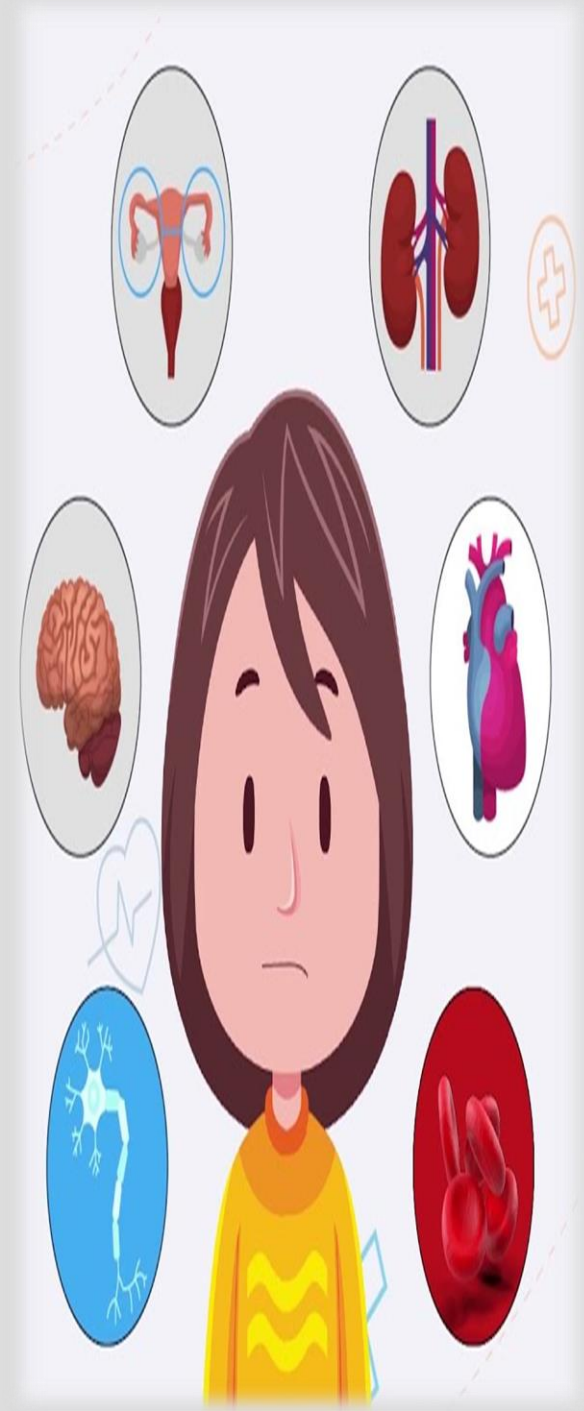
Lead is a soft, flexible, bluish-grey metal resistant to corrosion, that exists in both organic and inorganic forms.

This metal does not conduct electricity and it owns antiradiation properties.

According to the National Health and Nutrition Examination Survey data, from 2007 to 2010, approximately 535,000 children aged 1 to 5 years, meaning 2.6%, presented blood lead level above 5mg/ dL.

Even though lead is everywhere, the industrialized areas carry a higher risk for lead exposure.

(Dapul H, 2014)



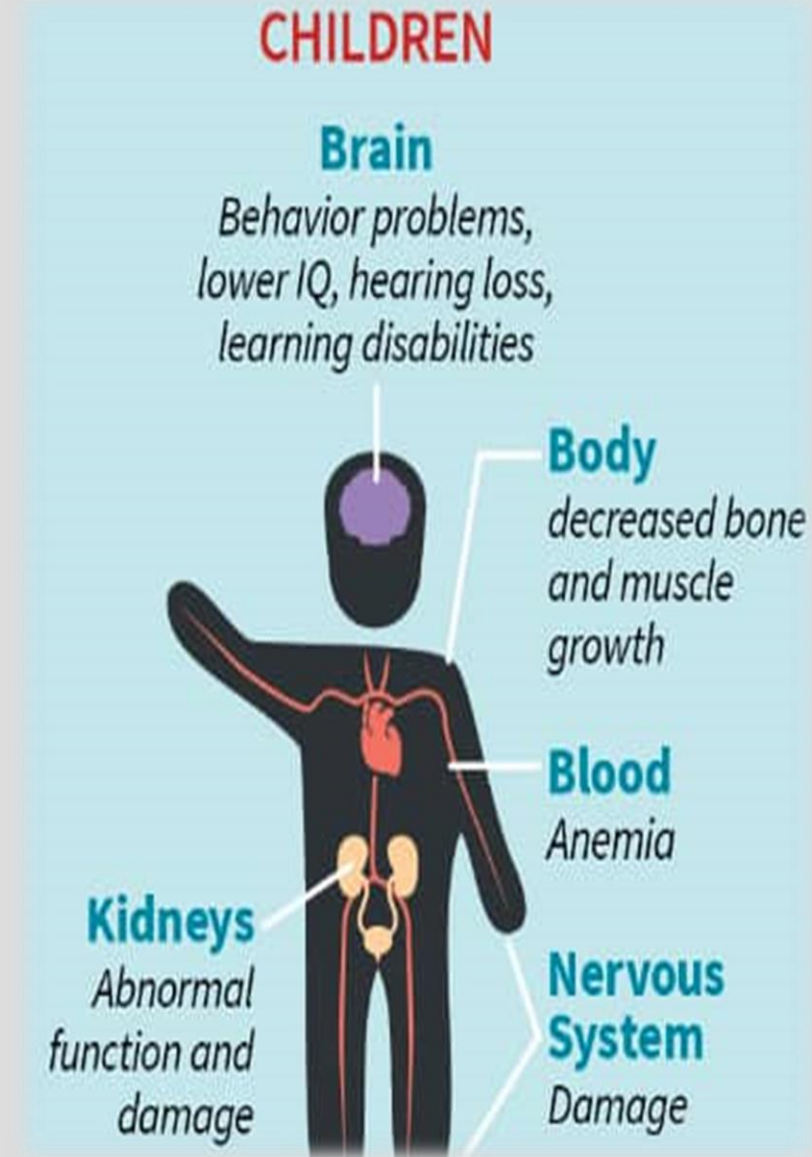
# Introduction

The ways of contamination include:

Swallowing, inhalation, prenatal exposure, and dermal exposure but the most important and frequent ones are swallowing and inhalation. The half-life of lead is between 30 and 40 days in men, while in children and pregnant women it can be longer.

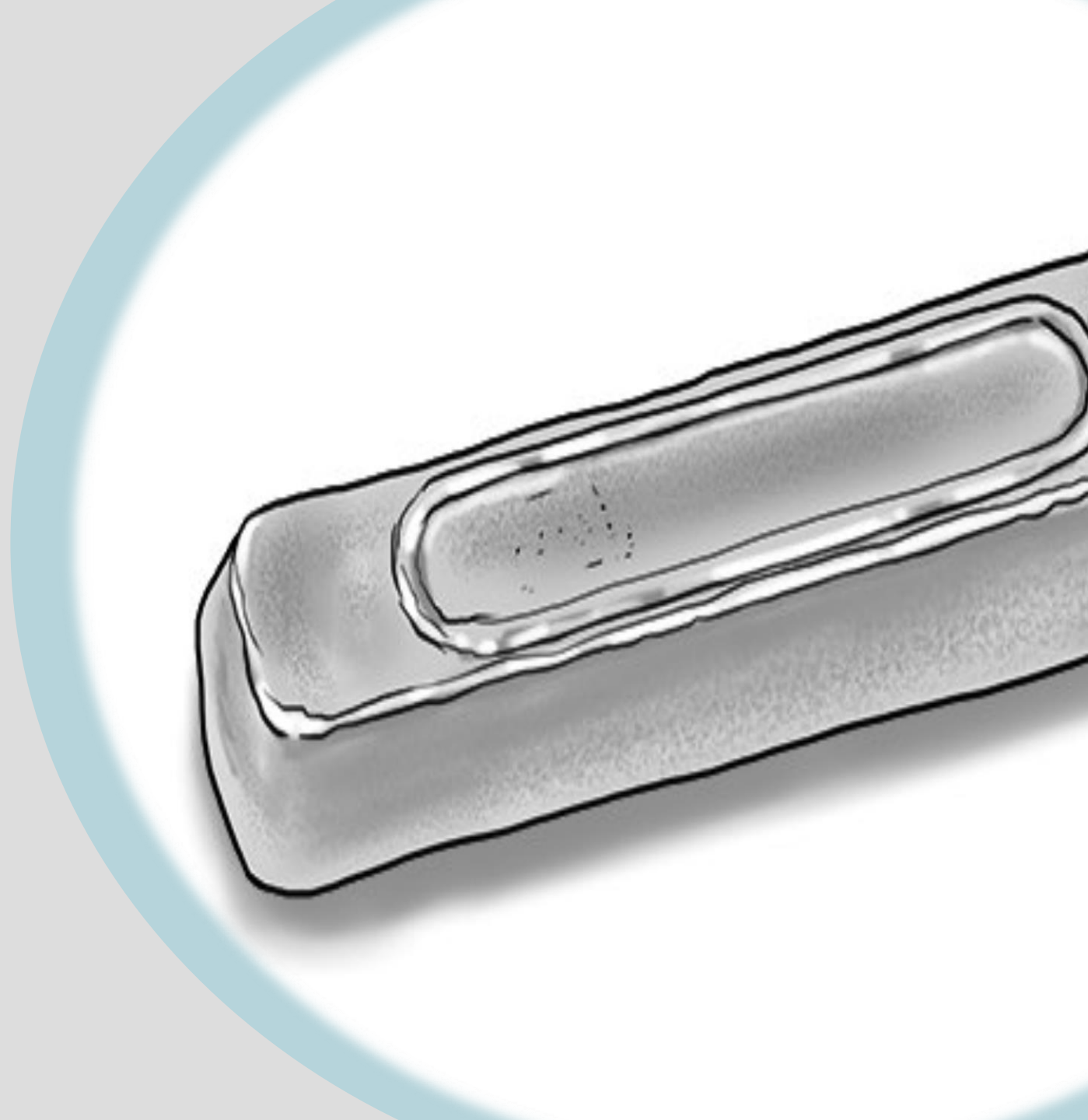
The clinical presentation of lead poisoning involves nervous, hematologic, and renal systems impairment, but it can also lead to gastrointestinal disorders, hypertension, and fertility impairment and even death.

Online: (Leadguidance.pdf, n.d.), (Blood lead levels in children aged 1–5 Years United States et al.)



**2**

**Aim**



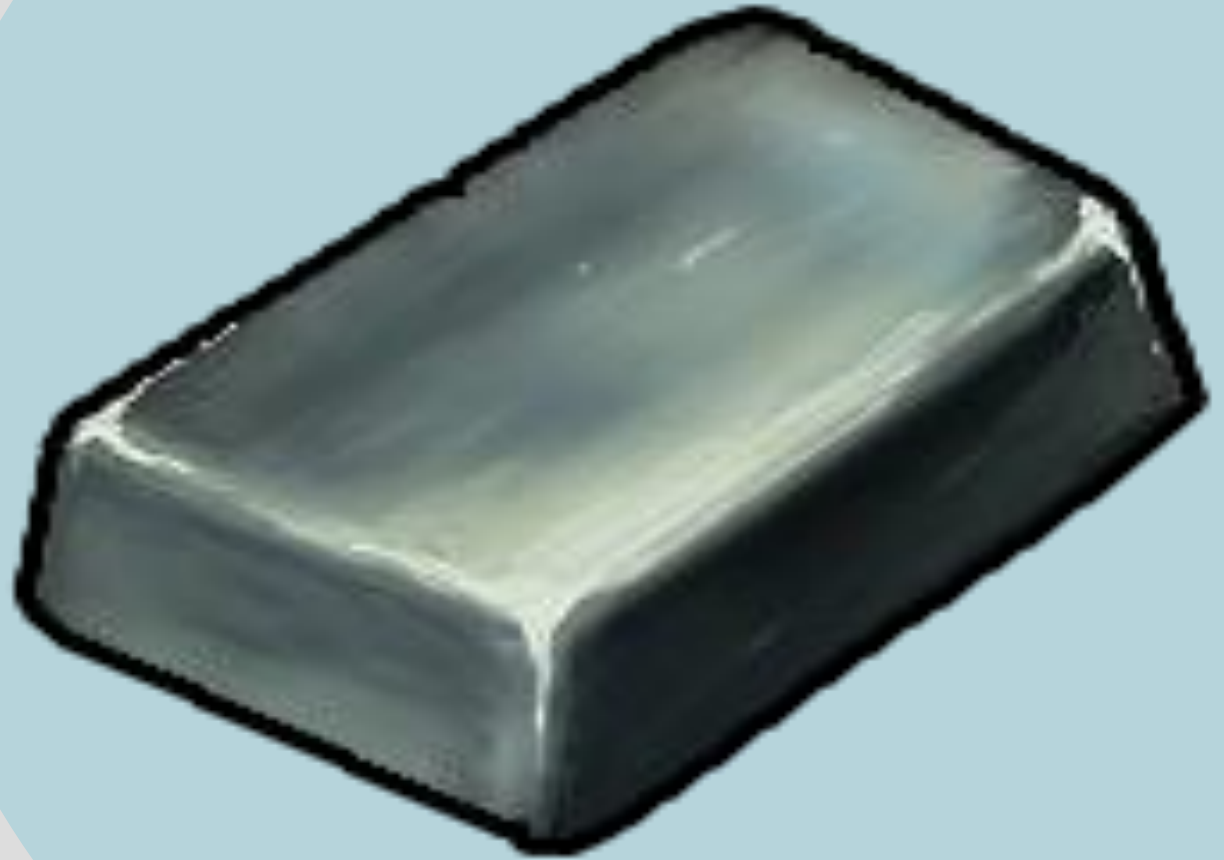


# Aim

We present a case report of lead poisoning in a 16-year-old girl with the aim of highlighting the difficulty in diagnosing this condition

3

Methods





# Methods

## 3.1. Presenting Concerns:

**Gender:** female.

**Age :** 16 year old.

**Cheif complain:** severe abdominal pain, accompanied by symptoms of loss of appetite, nausea, and vomiting.

**Social history:** family background with pottery making .

**Family history:** Father diagnosed with lead poisoning 2 years before .

**Laboratory data:** high urinary lead level of 219 mg/L.

**Past Medical history:** Three weeks before admission to the current clinic, she had another episode of saturnine colic and began chelation therapy with EDTA. appendectomy for suspected acute appendicitis.

**Medication history:** chelation therapy with EDTA.

**Diagnosis:** lead poisoning.

# Methods

## 3.2. Clinical Findings:

- ❖ Upon examination, the patient exhibited:
- ❖ Influenced general status
- ❖ Ailing face
- ❖ Jaundice of the sclera
- ❖ Blue pigmentation of the nails
- ❖ Painful abdomen upon palpation
- ❖ Weight loss



### 3.3 Diagnostic focus and assessment

Laboratory tests revealed:

- ❖ Hypochromic anemia (Hb: 10.9 g/dl, Htc: 31.6%, MCV: 77.6 fL)
- ❖ Elevated liver transaminases (ALAT: 158.9 U/L, ASAT: 63 U/L, GGT: 128 U/L)
- ❖ Conjugated hyperbilirubinemia (DBi: 1.432 mg/dL)
- ❖ Hyponatremia (Na: 132 mmol/L)
- ❖ Hypokalemia (K: 2.85 mmol/L)
- ❖ Elevated blood pressure (systolic: 156 mm Hg, diastolic: 96 mm Hg)
- ❖ Elevated blood lead level (66.28 mg/dL) and urinary lead level (419.7 mg/L)
- ❖ Elevated delta-aminolevulinic acid (7.66 mg/L)
- ❖ Abdominal ultrasound showed abnormalities in both kidneys.
- ❖ Consultations with specialists recommended continuing EDTA chelation therapy at an increased dose and initiating psychotherapy for behavioral disorders with depressive elements.

# 4

## Results



# Results

## 4.1 Therapeutic Focus and Assessment:

- ❖ Treatment included: Intense intravenous hydration (3 liters/24 hours initially)
- ❖ Diuretics and an angiotensin-converting enzyme inhibitor to manage hypertension
- ❖ Intravenous amino acids and oral liver protectors for liver function
- ❖ B-complex vitamins for neurological symptoms
- ❖ The patient's condition slightly improved over the first three days. Laboratory parameters normalized after approximately 10 days of treatment, and chelation therapy with EDTA was discontinued on the 6th day.

# Results

## 4.2 Follow-up and Outcome:

After 14 days of admission, the patient was discharged with no complaints. Recommendations included avoiding further lead exposure, particularly in pottery making.

Long-term outcomes depend on future exposure to lead.

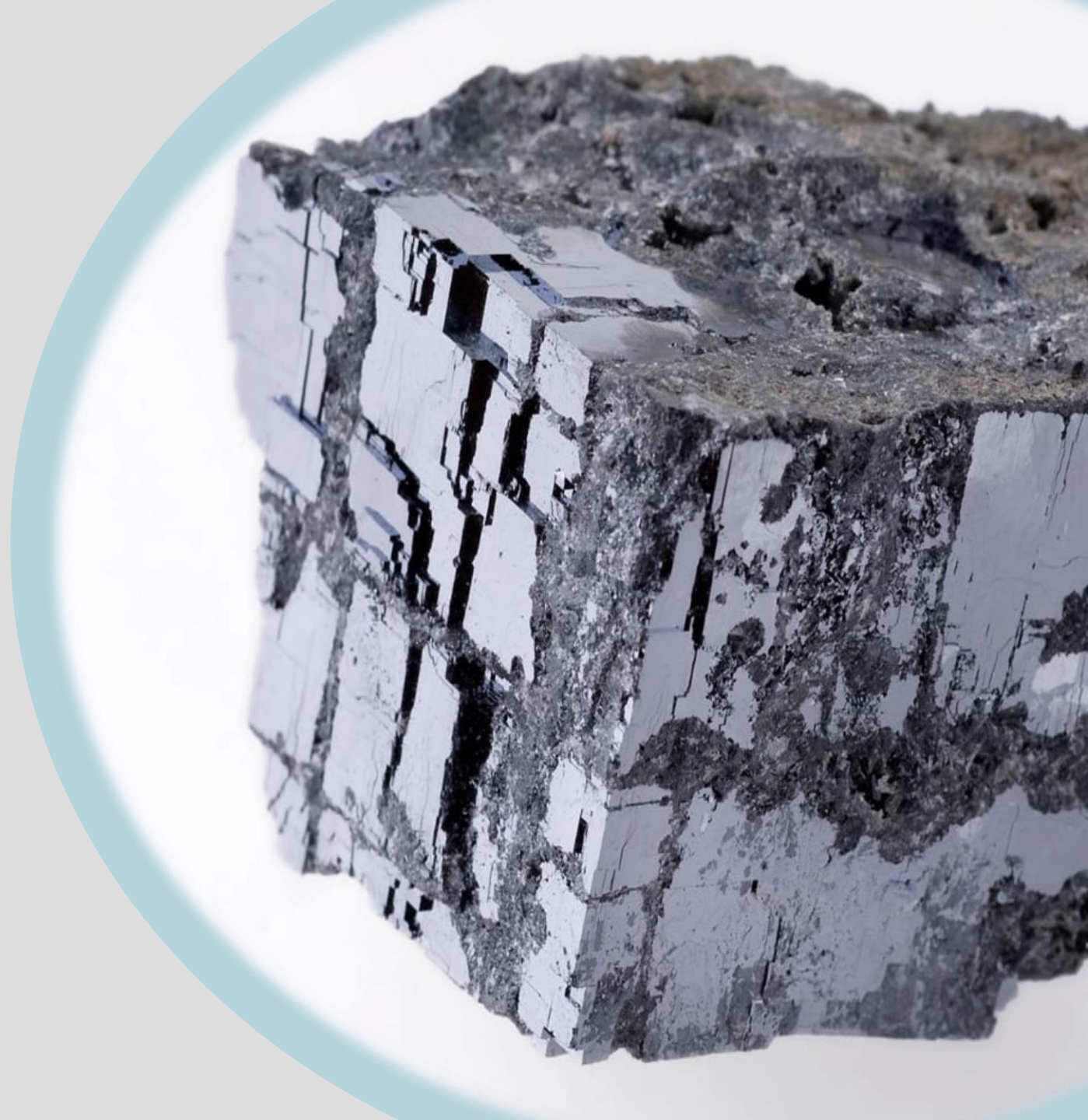
Follow-up plans include repeating blood lead levels after 12 and 24 months and assessing renal and hepatic functions with lead poisoning.





# 5

## Discussion





# Discussion

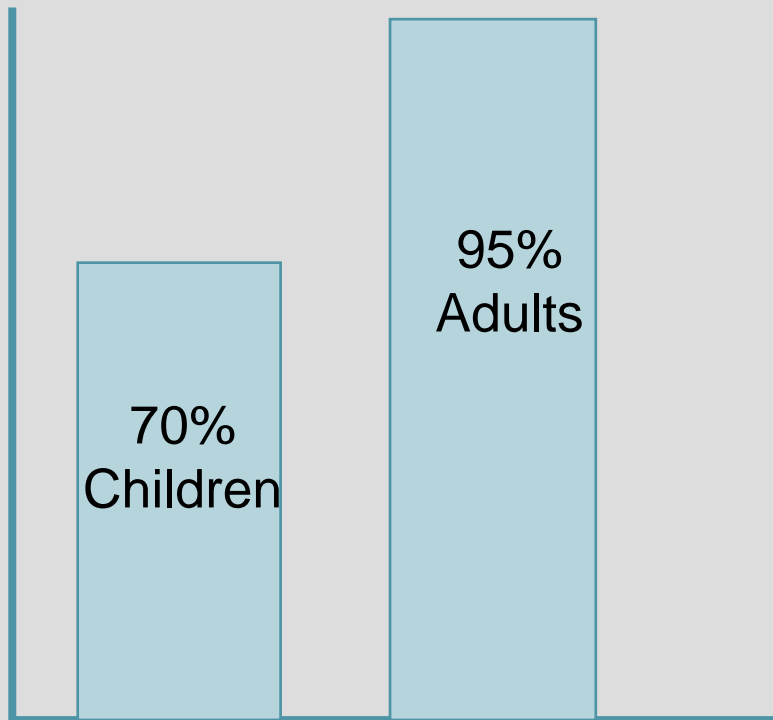
1. Lead poisoning is a severe health issue causing multiorgan damage and death, particularly in children.
2. Exposure is mainly through ingestion and inhalation, with children at higher risk due to their behavior.



(Dapul H, 2014)

# Discussion

3. Lead is stored in bones, teeth, and hair, and can lead to cardiovascular disease.



(Rubin R, Strayer DS, Rubin E, 2008)

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### Lead Poisoning

#### Common Symptoms

- decreased cognitive abilities
- fatigue and headaches
- irritability

#### Rare Symptoms

- constipation and abdominal cramping
- weight loss
- vomiting

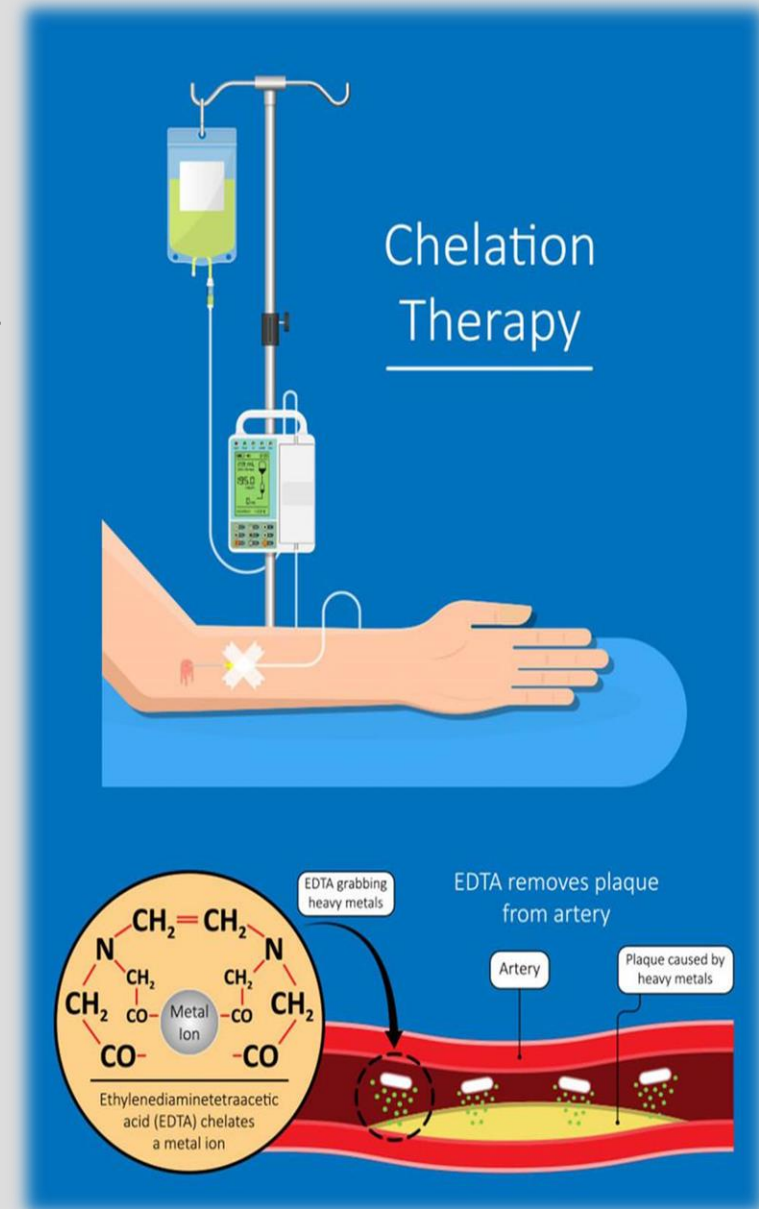
A light blue silhouette of an infant is shown on the right side of the infographic. Lines connect the common symptoms to the head area and the rare symptoms to the abdominal area of the silhouette.

# Discussion

4. Diagnosing lead poisoning can be challenging due to nonspecific symptoms. Prevention is crucial, and the U.S. has implemented a Childhood Lead Poisoning Prevention Program.

5. Regular screening is essential, especially for high-risk occupations or traditional practices.

6. Chelation therapy is the standard treatment, but it requires close monitoring due to potential renal impairment.



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Conclusion

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Pb

Lead  
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# Conclusion

Lead toxicity is a life-threatening condition because of its severe acute and chronic complications. In children, there is no safe blood lead level, prevention methods are, therefore, very important to avoid toxic multi-organic effects of this metal.

Even though the diagnosis represents a challenge in case of children mostly due to its rare incidence in teenagers, a physician must always include this possibility in the differential diagnosis for cases with suggestive symptoms

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THANK  
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