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Case Report
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Chronic Lead Poisoning with Abdominal Pain, Anemia and Hepatic Insufficiency

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Abstract

This paper mainly introduces a case of abdominal pain, anemia and liver function of a patient with chronic lead poisoning, the process is tortuous, and finally a clear diagnosis was made, and the patient was treated with lead detoxification, and finally the patient was cured, this case suggests the clinical, for unexplained abdominal pain, anemia and liver function insufficiency should be thought out to avoid misdiagnosis.

Keywords: Abdominal pain; Anemia; Hepatic insufficiency; Lead poisoning

Introduction

This is the case of a 44 years old female patient, married, of Han Ethnicity, Occupation: Hairdresser, admitted: September 29th, 2019.

Chief complaint: Poor appetite or Anorexia, fatigue and abdominal pain for five days.

Present medical history: The patient had symptoms of loss of appetite/anorexia with no obvious cause, not thinking about eating, with weakness, occasional nausea, emesis, with dizziness and drowsiness, vague pain and discomfort around the umbilicus, not related to eating, no acid reflux, heartburn, bloating, diarrhea, panic, chest tightness, shortness of breath, cough, cough, frequent urination, urgent urination, painful urination, fever for the past five days. The patient consulted at the local hospital, and symptoms did not improve after symptomatic treatment with acid suppression and gastric protection, later on consulted our hospital.

Past medical history: Physically healthy in the past, denied history of hypertension, diabetes mellitus, coronary heart disease, chronic bronchitis, gallstones, cholecystitis, hepatitis, tuberculosis and other infectious diseases, no history of surgery, no history of blood transfusion.

Personal history: Born locally, deny history of smoking, drinking, exposure to radioactive substances and chemical toxins.

Marital history: Menstrual history, and family history had no special findings.

Physical examination: Normal vital signs, no special cardiopulmonary and neurological investigations, anemic appearance, abdominal tenderness, subxiphoid and periumbilical tenderness, no rebound pain, liver and spleen not detected, normal bowel sounds, no significant edema in both lower limbs. The patient was admitted to the hospital and the relevant examination indicators were completed; abnormal indicators included; Hemoglobin 102 g/L, ALT 982 U/L, AST 636 U/L; the remaining indicators viral examination four items, blood coagulation functions, hepatitis screening, autoimmune liver disease antibody, hepatitis B five, troponin, D2-aggregates, amylase, CRP, lactate, AFP, CA125, CA199 showed no significant abnormalities. The electrocardiogram result was normal. The abdominal ultrasound showed mild fatty liver. The patient was admitted to the hospital with the following diagnoses; poor appetite or anorexia to be investigated, abdominal pain to be investigated, liver insufficiency, anemia, and fatty liver.

After admission, the patient was administered symptomatic treatment such as conventional acid suppression, gastric protection and liver protection, but the abdominal pain did not ease and tended to worsen, tossed and turned at night, making it difficult to sleep. The patient's appetite was getting worse and worse, portrayed a melancholic painful face. On physical examination, the abdomen was tender, the abdominal muscles were not tense, there was pressure pain around the epigastric regions and around the umbilicus, there was no rebound pain, Murphy's sign was negative, McBurney's pressure pain was negative, an emergency abdominal CT was performed and revealed the following:

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A small amount of pelvic effusion, basically excluding perforation, appendicitis, cholecystitis, pancreatitis, etc. Omeprazole was administered for sedation, and the patient's symptoms were relieved after sedation, but the effect of the drug disappeared and the patient's above symptoms returned!

What the hell is this disease? Through comprehensive analysis of the causes of abdominal pain in patients, the following diseases need to be differentiated:

Acute myocardial infarction, aortic coarct: The patient's electrocardiogram, troponin is normal, the difference in blood pressure between the upper extremities is not large, and cardiovascular disease is discharged after consultation with cardiology.

Arterial embolism: Common pulmonary embolism, generally patients with respiratory distress, often with a history of long-term bed rest, atrial fibrillation, etc., according to the patient's age, past history, the acute intestinal obstruction, intestinal perforation: The patient has a soft abdomen, the anus can vent and defecate, and a small amount of pelvic fluid can be seen in the abdominal CT, which can be ruled out after consultation with gastrointestinal surgery, acute pancreatitis, acute cholecystitis, acute appendicitis: According to the patient's signs, blood tests, and imaging examinations can be ruled out; acute gastritis, peptic ulcer: The patient's abdominal pain is relieved between giving gastroscopy examination shows chronic non-atrophic gastritis. The patient can be excluded basically.

Causes of liver insufficiency:

1. Infection: The patient's viral four item examination, hepatitis B five item examination, hepatitis screening can exclude viral, the patient does not have a history of water contact in infected areas, basically can exclude parasitic infections.

2. History of drug use: The patient complained of no previous history of exposure to special drugs and chemicals and food intake history, so temporarily can be ruled out.

3. The patient does not have a history of alcohol consumption; alcoholic can be ruled out.

4. Genetic metabolism and immunity: The patient Family history of special genetic disease, autoimmune antibodies and other indicators are not significantly abnormal, can be ruled out for the time being.

Mild anemia: It may be related to the patient's poor appetite and malnutrition in recent times.

After six days of symptomatic treatment with sedation, gastric protection and liver protection, the patient's liver function was rechecked: ALT 465 U/L. The patient's transaminases were significantly better than before, but the patient's abdominal pain was still recurrent and tended to worsen, so the patient was advised to seek further consultation at a higher-level hospital to clarify the cause of abdominal pain.

However, five days later, we saw this patient again in the outpatient clinic with a painful face and hands over the abdomen, asking to be hospitalized. Since the diagnosis was still not clear at the provincial hospital, the patient had to return to our hospital and asked for pain relief. After repeated questioning of the patient's medical history and detailed examination of the patient's body, it was found that there were black dirt deposits in the patient's fingernails, and that the patient was a hairdresser by profession who often dyed hair for customers and did not pay attention to hygiene protection, but had no history of exposure to other substances. The patient was urgently administered 6 tests of trace elements, and the value of the test was: Blood lead 446 ug/L (normal reference value 0 ug/L to 100 ug/L), which was much higher than the test value after repeated dilution by the laboratory. Up to this point the patient's abdominal pain and liver insufficiency could be explained. The patient was also administered edetate sodium injection 1 g daily, added into 250 ml glucose injection, IV for 4 h to 8 h for three days, stopping for four days as a course of treatment, and with oral lead detoxification drugs, after about 2 courses of treatment, the patient's abdominal pain symptoms were relieved, eating gradually resumed, and liver function was significantly better than before, and discharged from the hospital with oral lead detoxification drugs, and the patient's blood lead was 98 ug/L after one month follow-up, hemoglobin The patient's blood lead was 98 ug/L, hemoglobin and liver function were normal, and the symptoms returned to normal.

Discussion

Lead has toxic effects on all tissues and organs of the body, mainly on the nervous, digestive and hematopoietic systems [1]. Lead can disrupt the normal function of excitation and inhibition of the cerebral cortex, impair cortical-visceral regulation, and reduce peripheral nerve conduction speed. When lead enters the human body, it mainly causes anemia due to impaired hemoglobin synthesis, abdominal pain due to vasospasm due to impaired porphyrin metabolism, impairment of γ-aminobutyric acid function, and damage to the nervous system [2]. Lead can cause abnormal metabolism of amino Ketovaleric acid, which leads to accumulation and oxidation of oxygen radicals and damage to hepatocytes. In addition, blood lead can enhance the expression of apoptosis protein, which directly damages hepatocytes and causes spasm of small arteries in the liver, resulting in local ischemia and liver damage [3]. The main manifestation of lead poisoning in the gastrointestinal tract is sudden onset of abdominal colic, which is severe and unbearable, the pain is mostly around the umbilicus, but also in the upper and lower abdomen; during the attack, there is anxiety, cold sweat, no fixed pressure point in the abdomen, no rebound pain, accompanied by nausea and vomiting, and the bowel sounds can be normal. Generally, the normal adult blood lead level is less than 100 ug/L. In this case, the patient's occupation is hairdresser and hair dyeing, and she has long-term contact with hair dye [4], and the hair dye contains lead acetate, if the content exceeds the national standard, it can enter the blood through the skin, respiratory tract and gastrointestinal mucosa, causing lead poisoning. Combined with the patient's clinical manifestations and auxiliary examinations suggesting anemia and liver function damage, the blood lead level is still several times higher than the normal value even though the patient's blood lead is diluted several times, so the diagnosis of chronic severe lead poisoning is confirmed, and the effect of lead expulsion treatment is obvious, and this case is in line with the above characteristics. Since lead poisoning is an occupational disease and the diagnosis is identified by the specialized occupational disease control institute, the receiving physicians lacked knowledge of the clinical manifestations of lead poisoning, and coupled with the patient's repeated episodes of periumbilical colic and the poor effect of general symptomatic treatment, they mostly considered surgical diseases and did not consider lead poisoning, resulting in misdiagnosis. The misdiagnosis in this case lasted for 10 days.

Reasons for misdiagnosis and lessons learned:

1. The medical history is not comprehensive enough, especially for those who have recurrent episodes of abdominal colic and the diagnosis is not clear, the patient's past history and occupational exposure history should be carefully inquired, and the patient's history of exposure to lead-containing substances is the most critical factor suggesting chronic lead poisoning [5].

2. Many physicians in general hospitals do not know enough about this disease, and they should consider not only common and multiple diseases but also rare and uncommon diseases when diagnosing.

3. The health department should train medical personnel in general hospitals on heavy metal poisoning. The identification should be enhanced in order to avoid misdiagnosis and pain to patients.

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