ДНІПРОВСЬКИЙ ДЕРЖАВНИЙ
МЕДИЧНИЙ УНІВЕРСИТЕТ

CASE OF MIXT INFECTION OF SALMONELLOSIS AND INFESTATION WITH THE LARVAE OF MOSQUITO CULEX IN A 9 YEARS OLD CHILD

Shostakovych-Koretskaya L., Chykarenko Z., Lytvyn K., Budaeva I., Nykolaychuk M., Gayduk T.

Introduction

- Infestation (from the Latin. Infestare - attack) - infection of the human with parasites (insects, mites and other arthropods)
- Accidental swallowing of insect larvae or eggs can cause gastroenterocolitis. Symptoms range from asymptomatic variants to clinically manifest variants with abdominal pain, nausea, vomiting, diarrhea, anal itching or rectal bleeding
- Confirmation – detection of larvae in stool
- The only type of infestation that is most often registered is myasis (B.87.)

Introduction

- **Real mosquitoes** [1] **or blood-sucking mosquitoes** (lat. Culicidae) are a family of Diptera belonging to the group of long-haired insects (Nematocera). The most common type of mosquitoes in Ukraine is the common mosquito (lat. Culex pipiens), a polytypic species of mosquitoes (Culicidae).
- Life cycle: after mating, the female lays eggs into water (lakes, puddles etc.), 120-280 eggs per time. They develop into mobile larvae during 40 hours to 8 days, 1-4 mm in size, which feed on small organisms living in water and grow very quickly.
- A person can become infected with eggs or larvae of mosquitoes by using poor quality water, liquid food, swimming in reservoirs with stagnant water

Case presentation

- Child V., 9 years old was admitted on the first day of the disease in a moderately severe condition with complaints of weakness, anorexia, shortness of breath of mixed character, rare dry cough, presence of puffiness in the face and elements of the urticaria exanthema on the face, trunk and extremities, small inspiratory dyspnea, sneezing, obstruction of nasal breathing, moderate serous discharge from the nose.

Epidemiological history

- Possible infection with eggs or larvae of mosquitoes occurred as a result of unboiled water or liquid products, on the surface of which female mosquitoes lay their eggs. According to the mother, the family uses water, which is stored in a jar without a lid. Water is replaced as used, but not every day.

Anamnesis of the disease

- The child became seriously ill when the above mentioned complaints appeared, the temperature did not rise. On the 2nd day of disease, the child's body temperature rose to 38.7 ° C, multiple vomiting appeared (up to 20 times a day), anorexia, cramping abdominal pain, nausea, watery diarrhea started up to 20 times a day on the 3rd day of the disease, thirst, dry skin, decreased diuresis. At the background of exicosis of 2nd degrees, metabolic ketoacidosis joined (intense smell of acetone in exhaled air, urine, feces, a sharply positive test with sodium nitroprusside in the urine.).

Objective status

- Moderate severity. On the skin of the trunk and extremities there are separate urticarial rash elements ranging in size from 1.5 cm to 5 cm in diameter, itchy. Puffy face, there are isolated urticaria. Nasal congestion with mucous discharge. Heart and lungsare nirmal. The abdomen is soft, moderately swollen, moderately painful in the epigastrium and mesogaster. There are no symptoms of peritoneal irritation, sigma is not spasmed, mesenteric lymph nodes are not detected. The liver is palpable 2 cm below the costal arch, elastic. The feces are abundant, watery, without pathological impurities. In each portion of vomit there are multiple (10-15 in sight) moving larvae of mosquitoes in black and black and red - pupae (bloodworm). There is a decrease in diuresis to 5 ml / kg / hour.

Laboratory investigation

- Hemogram on admission: hemoglobin - 121 G/l, erythrocytes - 4.39 T/l, leukocytes - 27.5 G/l, stab neutrophils - 2%, segmented neutrophils - 44%, eosinophilic granulocytes - 4%, lymphocytes - 40%, monocytes - 10%, ESR-3 mm/h. Blood glucose - 3.0 mmol/l, ALAT - 35 U, alpha-amylase - 64 mmo/l//h.
- Urinalysis: specific gravity - 1030, protein - 0.33 g / l, Leukocytes - single in the field of view, red blood cells - absent; test with sodium nitroprusside ++++.
- Bacteriological examination of feces: culture of S.enteritidis D is isolated.

Laboratory investigation

- Coprocytogram: mucus-no, white blood cells 10-30 in the field of view, red blood cells are absent.
- Identification of insect larvae in the stool and vomit was carried out by light microscopy. The larvae were harvested from vomit samples and stools, washed in saline and fixed in 10% buffered formalin. Based on the morphological study with light microscopy, the larvae were identified as the third or fourth molt Culex genus [11].

Final diagnosis

- Salmonellosis (S.enteritidis D), gastrointestinal form, moderate severity, exicosis of 1-2 degrees, metabolic ketoacidosis.
- Concomitant diagnosis: Gastrointestinal infestation by larvae of the genus Culex. Angioedema of the face. Acute urticaria. Allergic rhinitis.

Treatment

- Ceftriaxone for 7 days
- Albendazole (Wormil) for 5 days, in the dosage of 15 mg/kg/day
- IV regydration, dexametazone, loratadine

Recovery

- Vomiting stopped a day later, watery diarrhea persisted for up to 5 days, among complaints, intense cramping pain in mesogastrium was dominating, nausea and severe anorexia, which persisted up to 7-8 days from the onset of the disease.
- In the period of recovery (on the 7^{th}, 8^{th}, 9^{th} day of the onset of the disease) multiple dead larvae of mosquitoes were found in the feces, but no diarrhea was observed. After the release of dead larvae with feces, the child's health improved significantly: appetite appeared, he became more active, abdominal pains were completely stopped.
- The child was discharged with full clinical recovery on the 9^{th} day from the onset of the disease.

Conclusions

- Mosquito infestation is a rare pathology
- The infestation by mosquito larvae in a child was accompanied by allergic manifestations in the form of urticaria, bronchospasm, allergic rhinitis and angioedema.
- Gastrointestinal invasion by mosquito larvae manifested with gastroenteritis symptoms
- The long-term presence of mosquito larvae in the gastrointestinal tract caused endogenous toxicosis (complete refusal to eat and drink), intense abdominal pain. Only after the albendazole treatment and the release of the larvae with feces, the state of health returned to normal
- Apparently, the reason for mosquito gastrointestinal infestation in this case was the use of preserved water, which had been kept open for more than a day, which enabled the female mosquito to lay eggs on the surface of the water.

List of References

- Karabiber H, Oguzkurt DG, Dogan DG, Aktas M, Selimoglu MA. 2010. An unusual cause of rectal bleeding: intestinal myiasis. J. Pediatr.
- Gastroenterol. Nutr. 51:530 –531. 180. Karaman E, et al. 2009. Otomyiasis by Wohlfahrtia magnifica
- **Open Journal of Pathology**
  Vol.06 No.04(2016), Article ID:71268,6 pages
  10.4236/ojpathology.2016.64020 **A Case Report of Intestinal Myiasis in a Japanese Man**
- Francesconi, F. and Lupi, O. (2012) Myiasis. Clinical Microbiology Reviews, 25, 79-105. http://dx.doi.org/10.1128/CMR.00010-11
- *Elena B. Vinogradova.* 2 // Culex pipiens pipiens mosquitoes: taxonomy, distribution, ecology, physiology, genetics, applied importance and control / Dr. Golovatch S.I.. — Bulgaria: «Pensoft», 2000. — Vol. II. — 239 p. — ISBN 954-642-103-0. (English)
- Identification of insects by larvae (Opredelitel' nasekomykh po lichinkam. — Moscow: «Prosveshcheniye», 1972. — Vol. VI. — P. 63. — 400 p. — 40 000 copies. (Russian)
- *Ghazi Krida, Ali Bouattour, FrancËois Rodhain & Anna-Bella Failloux* Variability among Tunisian populations of Culex pipiens: genetic structure and susceptibility to a filarial parasite, Brugia pahangi (English). — 1998. — No. 84. — P. 139—142.
- ↑ *Shinji Kasai, Osamu Komagata et all.,* PCR-Based Identification of Culex pipiens Complex Collected in Japan (English). — 2008. — P. 184—191.
- ↑ *Mullen, Gary.* Medical and Veterinary Entomology / Gary Mullen, Durden. — London: Academic Press, 2009.
- ↑ *Devlin, Hannah*. Sweat and blood why mosquitoes pick and choose between humans, London: The Times (February 4, 2010). Revised 13 of May, 2010.
- *Plavilschikov N. N.* The insect identifier: A brief determinant of the most common insects of the European part of Russia. — M.: Topical, 1994 (Russian).