THE DENGUE FEVER WITH ACUTE RESPIRATORY INFRACTION AND CONJUNCTIVITIS DEXTRA IN 8-YEAR-OLDS: A CASE REPORT

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ABSTRAK

Abstract:
Dengue fever is a disease caused by the dengue virus (DENV-1, DENV-2, DENV-3, and DENV-4) which female Aedes aegypti and Aedes albopictus mosquitoes transmit. There are several cases of DHF in children accompanied by Acuter Respiratory Infection (ARI) and conjunctivitis. This study aims to determine the interaction between the three conditions, which can affect diagnosis and treatment. This research uses a case study method of a boy at RSUD Dr. Harjono S Ponorogo with complaints of fever for 6 days. Fever fluctuates, especially at night and decreases in the morning. There are abnormal laboratory results high in erythrocytes (5.04 µl), and low in platelets (136,000 µl) on day 6 of fever. The patient in this case was diagnosed with dengue fever with ARI and conjunctivitis dextra and was hospitalized because he could not receive oral medication. No warning signs appeared in the patient, and during hospitalization with fluid, antipyretic and antiemetic treatment, the patient's clinical condition improved, followed by an increase in platelets, and no fever occurred within 2 x 24 hours until the patient returned.

Abstrak:
Demam dengue adalah penyakit yang disebabkan oleh virus dengue (DENV-1, DENV-2, DENV-3, dan DENV-4) yang ditularkan oleh nyamuk betina Aedes aegypti dan Aedes albopictus. Terdapat beberapa kejadian DHF pada anak yang disertai dengan ISPA dan konjungtivitis. Penelitian ini bertujuan untuk mengetahui interaksi antara ketiga kondisi tersebut, yang dapat mempengaruhi diagnosis dan pengobatan.. Penelitian ini menggunakan metode studi kasus dari seorang anak laki-laki di RSUD Dr. Harjono S Ponorogo dengan keluhan demam sejak 6 hari. Demam naik turun terutama naik pada malam hari dan pada pagi harinya mengalami penurunan. Terdapat hasil laboratorium abnormal Tinggi pada eritrosit (5.04 µl), dan rendah pada trombosit (136.000 µl) di hari ke 6 demam. Pasien dalam kasus ini didiagnosis menderita demam dengue dengan ISPA dan konjungtivitis dextra dan dirawat di rumah sakit karena tidak dapat menerima obat secara oral. Tidak ada tanda peringatan yang muncul pada pasien, dan selama rawat inap dengan pengobatan cairan, antipiretik, dan antiemetik, kondisi klinis pasien membaik, diikuti peningkatan trombosit, dan tidak terjadi demam dalam waktu 2 x 24 jam hingga pasien kembali.

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INTRODUCTION

Dengue fever is a disease caused by the dengue virus transmitted by the female mosquitoes Aedes aegypti and Aedes albopictus. The incidence of dengue fever is increasing every year, with an estimated 390 million people globally experiencing it every year [1] Incidences of dengue fever in children are higher than in adults, where in Indonesia alone, from 2016 to 2019, consecutive cases were 54.74%, 51.66%, 51.76%, and 53.08% in the age group 0–14 years [2] [8] [9].

Dengue fever is classified as dengue without warning signs, dengue with warning signs, and severe dengue, according to the WHO. The probability criteria for dengue can be enforced when a patient lives or travels to an endemic area and has fever plus two symptoms of nausea, vomiting, rash, abdominal pain, a positive tourniquet test, leukopenia, and the presence of a warning signal. Dengue fever diagnosis can be enforced through anamnesies, physical examinations, and even supporting examinations that support the diagnosis of dengue [3][19].

The therapy given to DHF patients is mainly crystalloid fluid resuscitation ((0.9% NaCl) and Ringer lactate) and colloid fluid if the patient experiences hypovolemic shock. From there, it is important to know the course of DHF, which has three phases, namely the fever phase, the critical phase, and the healing phase. In the critical phase, the fever will decrease but can appear as a warning sign that can lead to severe DHF, namely the patient experiences shock. [10][20]. DHF, ARI, and conjunctivitis have overlapping symptoms, such as fever and eye discomfort. This research aims to understand the interactions between the three conditions, which can influence diagnosis and treatment.

CASE REPORT

An eight-year-old boy weighing 25.5 kilos came to the hospital. His parents took Dr. Harjono S. Ponorogo with a fever complaint for 6 days before he was admitted to the hospital. The fever rises and drops mostly at night, and in the morning it decreases. On the first and second days of the fever, the patient experienced nausea and vomiting every time he took the medication. The patient's appetite decreased, his body drowned, and he coughed, but his sputum didn't come out. The patient also had fluid BAB for the last 3 days at a frequency of 2x a day, no mucus, no blood, and a typical stool smell. Besides, the patient complains that the right eye continues to be wet and red. Other complaints such as colds (-), numbness (-), and pain (-). A history of similar events, seizures, and high fevers is denied. No history of trauma, ISPA, or long-term treatment. Family history of similar complaints, diabetes mellitus, and hypertension denied. The patient's pregnancy history is the first child to reach the age of the mother at the time of birth. Patient mothers regularly check in with the local midwife every month. Vitamins and blood supplement tablets are regularly consumed by mothers during pregnancy. During pregnancy, the mother had no history of hospitalization, high fever, diabetes mellitus, hypertension, or infectious diseases. The patient's mother also doesn't smoke or take any drugs or spices.

The patient was born spontaneously in the local midwife at the age of 38 weeks of pregnancy, enough months, apparent redness, instant crying, pale (-), blue (-), yellow (-). The history of immunization according to the description of the patient's mother, the patient has received a complete basic immunization in accordance with the schedule in Puskesmas. Breast milk is given until the patient is 2 years old.

At the general status examination, the general condition of the patient was obtained with vital signs: blood pressure 95/65 mmHg, temperature 37,8o C, pulse frequency 116 x/min, respiratory frequencies 21 x/ min, and 98% oxygen saturation without nasal canal. Head and

neck examination obtained a normocephal shape of the head, the head hair was black and not easily falling, there was a conjunctive injection (conjunctival redness) and hyperlacrymation of the right eye. There was no icteric sclerosis or conjunctival anemia in both eyes. There's no secretions in the nose or in the breathing of the nasal tubes. Both ears are symmetrical and there is no secretion. There were no signs of cyanosis on the lips, the tongue was not dirty, and there was no enlargement of the lymph gland.

Physical examination of the chest obtained a symmetrical chest wall, normochest, and no retraction. Right and left chest development is symmetrical, the framitus is normal, and sound is heard throughout the lung space during percussion. Basic pulmonary vesicular sound is normal; there are no extra sounds like ronkhi or wheezing. Physical examination of the heart obtained ictus cordis invisible and strong lift, the heart sounds S1 and S2 regular and no sound murmur. A physical examination of the abdomen is obtained parallel to the thoracic wall, not distended, and on auscultation, the intestinal peristaltic sound is within normal limits. There's no pressure in the abdomen, no organ enlargement. Extremely warm, CRT less than 2 seconds, and no petekie, purple, echoes, or edema.

The Rumple Leed test was performed on the second day of treatment (18 November 2023) with a negative result. The complete laboratory blood tests are as follows:

Table 1.
Results of laboratory tests on November 17, 2023

Assessment	Result	Reference Value
Haematology		
Haemoglobin	14.2	11.0 - 16.0
Eritrosit	**H 5.04**	3.60 - 4.80
Leukosit	5.54	4.5 - 13.0
Hematokrit	40.0	36.0 - 56.0
Trombosit	**L 136**	150 - 450
MCV	**L 79.5**	80.0 - 100.0
MCH	28.3	28.0 - 36.0
MCHC	35.6	31.0 - 37.0

Calculate Type		
Eosinofil	0.0	0.0 - 6.0
Basofil	0.4	0.0 - 2.0
Neutrofil	64.1	42.0 - 85.0
Limfosit	28.9	11.0 - 49.0
Monosit	6.6	0.0 - 9.0

Table 2.
Results of Laboratory Examinations on November 18, 2023

Assessment	Result	Reference Value
Haematology		
Haemoglobin	13.4	11.0 - 16.0
Eritrosit	4.73	3.60 - 4.80
Leukosit	**L 3.74**	4.5 - 13.0
Hematokrit	37.5	36.0 - 56.0
Trombosit	**L 144**	150 - 450
MCV	**L 79.3**	80.0 - 100.0
MCH	28.4	28.0 - 36.0
MCHC	35.8	31.0 - 37.0
Calculate Type		
Eosinofil	0.0	0.0 - 6.0
Basofil	0.1	0.0 - 2.0
Neutrofil	71.2	42.0 - 85.0
Limfosit	22.2	11.0 - 49.0
Monosit	6.5	0.0 - 9.0

The medical early diagnosis is dengue fever with ISPA and dextra conjunctivitis. The therapy given is an infusion of RL 20 drops per minute macro, an injection of cefotaxime 3 x 500 mg, metamizole 3 x 1⁄2 ampoules, ondansentron 3 x 1⁄2 ampules, ranitidine 2 x 1 1/2 ampoule, paracetamol tablets 4 x 1⁄2 tablets, and OBH syrup 3 x 1 teaspoon.

DISCUSSION

Dengue infection is a disease caused by the dengue virus, which belongs to the family Flaviviridae and has four serotypes: DENV-1, DENV-2, DENV-3, and DENV-4. Dengue infection is transmitted by the female mosquitoes Aedes aegypti and Aedes albopictus, which also transmit the chikungunya virus, yellow fever, and Zika [4]. The incubation period for the disease is 4 to 7 days, but it can last from 3 to 10 days. The pathogenesis of dengue fever through mosquito bites is still unclear. Skin macrophages and dendritic cells became the first targets that then migrated to the lymph glands and spread through the lymphatic system to other organs. Viremia

can appear for 24 to 48 hours before the onset of symptoms. Then there is a complex interaction between the host factor and the virus that determines whether the infection is symptomatic, typical, or severe [5][13].

Some people who are infected with dengue have no symptoms or are asymptomatic, but some who have symptoms most commonly include high fever, headaches, myalgia, arthralgia, nausea, vomiting, and redness of the rash [6] [11]. A small percentage of infections (0.5 to 5 percent) develop into severe dengue. Without proper treatment, the mortality rate can exceed 20 percent, especially in children [3]. Severe dengue fever with increased microvascular permeability and shock syndrome is suspected to be associated with infection caused by the second serotype of the dengue virus and the patient's immune response, but can also occur due to infection by only one serotipe. There are three phases of the course of dengue disease: the fever phase, the critical phase, and the recovery phase (convalescence) [2][12].
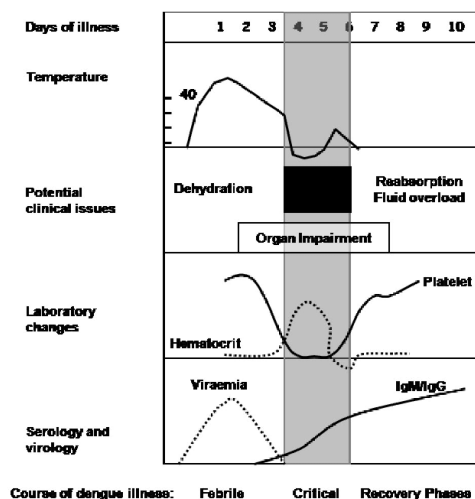

Figure 1. The journey of dengue disease

The fever phase is characterized by a high fever that occurs suddenly, persistently, sometimes bifasically, and lasts for 2–7 days. Other symptoms such as redness, headache, retroorbital pain,

anorexia, myalgia, and arthralgia can also be found. In addition to liver pain, nausea, vomiting, abdominal pain, and a sore throat can also be experienced by the patient. Slight bleeding, such as petekie, epistaxis, and gum bleeding, can also occur [3]. When defervescence occurs, it indicates that the patient has entered a critical phase of plasma infiltration that can trigger hypovoleemic shock. Usually there's an increase in hematocrites, which is a warning sign [2].

Tabel 3. *Warning Sign*

Parameters	Description
Clinical	Persistent vomiting
	Pain/ Pressure pain in the abdomen
	Anxious/ lethargic
	Mucous bleeding
	Hepatomegaly >2 cm
	Liquid accumulation
Laboratory	An increase in the hematocrit and a rapid decrease in the thrombocytes.

When the patient can pass the critical phase for 24–48 hours, there will be a gradual reabsorption of extravascular fluid for the next 48–72 hours. This phase is called a recovery phase, accompanied by clinical improvement of the patient, stabilization of the hemodynamic status, and improvement in diuresis [2]. Dengue fever is classified into three categories: dengue without warning signs, dengue with warning signs, and severe dengue [7][16].

Diagnostic tests that use serum, plasma, or blood to detect NS-1 virus antigens in the fever phase as well as Ig-M and Ig-G antibodies in the critical or recovery phase. Rumpel-lead tests can also be performed, including a complete laboratory examination of the blood, especially hematocrite and platelet counts. The execution of dengue fever depends on the stage of the patient's disease. Diseases that appear early without warning signs can be treated with adequate paracetamol and oral fluid. Patients with warning signs,

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severe dengue, or situations such as infants, the elderly, pregnancy, diabetes, and those living alone need to be hospitalized. When there is a warning sign, a crystaloid IV can be administered, and the rate of fluid is nitrated based on the patient's response. Colloids can be administered to patients suffering from shock when no improvement has been shown with previous administration of crystaloids [3][15].

A blood transfusion is required if there is severe bleeding or suspected bleeding when the patient's condition remains unstable and the hematocrit decreases despite adequate fluid resuscitation. Thrombocyte transfusion is considered when the number of platelets drops to <20,000 cells/microliter and there is a high risk of bleeding. Avoid aspirin and NSAIDs, as well as other anticoagulants. The patient in this case had a fever for six days before being admitted to the hospital. The fever rises and drops mostly at night, and in the morning it decreases. This corresponds to the symptoms that can arise in the fever phase, with an interval of 2–7 days of fever and a rising or descending curve. On days 1 and 2 of fever, the patient may experience numbness, which is also one of the symptoms that can appear in the phase of fewer fevers, including mild bleeding as well as nausea and vomiting every time taking the medicine. Other symptoms such as decreased appetite, drowning, coughing, fluid BAB, and redness of the eyes can also be found in patients with dengue fever, especially during the fever phase. On physical examination obtained, the general condition of the patient appears weak with vital signs of blood pressure 95/65 mmHg, temperature 37,8 oC, pulse frequency 116 x/min, respiratory rate 21 x/min, and oxygen saturation 98% without nasal canal. There's an increase in body temperature, but other vital signs are still within normal limits. The eye examination shows conjunctival injections (conjunctive redness) and hyperlacrymation in the right eye, which indicate the patient has dextra connectivity [14][17].

The Rumpel Leed test was performed on the second day of treatment (18 November 2023) at a patient's blood pressure of 70/30 mmHg, where the pressure was maintained at 50 mmHg for 5 minutes, and the result was negative, i.e., no petekie in the distal fossa cubiti. Despite this, a complete laboratory blood test showed that the thrombocyte levels were below normal on the 6th day of fever (17 November 2023) of 136,000, which supported the diagnosis of dengue fever. This corresponds to the critical phase where defervescence occurs, followed by an increase in platelets that can occur on the 7th day of illness. At the time of follow-up, no warning sign was obtained, and the patient's clinical condition improved. Laboratory blood results on day 8 showed a rebound thrombocyte increase, so the patient was returned. During hospitalization, patients are given an infusion of RL 20 drops per minute of macro to maintain tissue perfusion and prevent shock. A 3 x 500 mg cefotaxime injection was given because the patient had diarrhoea. Santagesic injections of 3 x 1⁄2 ampoules and paracetamol tablets of 4 x 1⁄2 tablets to reduce fever; ondansentron injection of 3 x 1⁄2 ampules to reduce nausea and vomiting; ranitidine injection of 2 x 1⁄2 ampules; and OBH syrup of 3 x 1 teaspoon to alleviate cough [18].

The findings from the case involving a patient diagnosed with dengue fever, acute respiratory infection (ARI), and conjunctivitis dextra provide several new contributions to medical knowledge and clinical practice. The observation of thrombocyte levels dropping below normal (136,000 on day 6) supports the critical phase of dengue where monitoring is essential. The subsequent rebound increase in platelets by day 8 suggests that timely intervention can lead to recovery, emphasizing the importance of regular blood tests in managing dengue patients. The treatment regimen, including

intravenous fluids (Ringer's Lactate), antipyretics, anti-emetics, and antibiotics (cefotaxime), demonstrates a multifaceted approach to managing symptoms and preventing complications like shock and dehydration. This case supports the use of aggressive fluid therapy and symptomatic treatment in improving patient outcomes.

CONCLUSION

Patients in this case were diagnosed with dengue fever and hospitalised because they could not receive medication orally. No warning sign appeared in the patient, and during hospitalised with liquid, antipyretic, and anti-emetic treatment, the patient's clinical condition improved, followed by an increase in platelets, and no fever occurred within 2 x 24 hours until the patient was returned. Given that some patients may present with additional health issues alongside dengue (like ARI and conjunctivitis), future research could focus on understanding how comorbidities affect the clinical course of dengue fever and how best to manage these complex cases.

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