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INTRAVENOUS IMMUNOGLOBULIN THERAPY FOR KAWASAKI DISEASE (CASE REPORT)

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Abstrak

Penyakit Kawasaki (KD) adalah vaskulitis akut dengan penyebab yang tidak diketahui. Prevalensi penyakit Kawasaki lebih besar di negara atau daerah maju yang disebut juga dengan daerah maju. Sepanjang tahun 2021, teridentifikasi dua kasus Kawasaki lengkap di RS Perkebunan Jember Klinik. Menggunakan skor Harada 3, skrining pengobatan imunoglobulin intravena (IGIV) dihitung. Secara umum, IGIV digunakan untuk mengurangi risiko kelainan/ kerusakan pada arteri koroner. Tujuan dari penelitian ini adalah untuk mengidentifikasi kriteria diagnostik dan indikasi pemberian IGIV pada anak dengan penyakit Kawasaki. Metode kualitatif dengan pendekatan laporan kasus. Pasien yang terdiagnosis penyakit Kawasaki harus mendapatkan terapi dan perawatan berdasarkan gejala dan kondisinya. Penyakit Kawasaki dapat diobati dengan sejumlah obat yang berbeda. IGIV dapat diberikan kepada pasien penyakit Kawasaki sebagai bentuk pengobatan. Perawatan IGIV berdasarkan Skor Harada. Penyakit Kawasaki merupakan kondisi yang jarang disadari oleh masyarakat umum. Kesimpulan yang dihasilkan adalah sebagai berikut: Penyakit Kawasaki Lengkap didiagnosis dengan demam terus-menerus selama lima hari ditambah 4 dari 5 gejala klasik. Skrining dengan sistem skoring diperlukan dalam pengambilan keputusan pemberian IGIV.

Kata Kunci: Penyakit Kawasaki, skor Harada, imunoglobulin intravena

Abstract

Kawasaki disease (KD) is acute vasculitis with an unidentified cause. The prevalence of Kawasaki disease is greater in developed countries or regions, also known as developed areas. Throughout 2021, two cases of complete Kawasaki were identified at Perkebunan Jember Klinik Hospital. Using a Harada score of 3, intravenous immunoglobulin (IGIV) treatment screening was calculated. In general, IGIV is used to reduce the risk of abnormalities/damage to the coronary arteries. The purpose of this study is to identify the diagnostic criteria and indications for administering IGIV to children with Kawasaki disease. Qualitative Method with the case report approach. Patients diagnosed with Kawasaki disease must receive therapy and care based on their symptoms and conditions. Kawasaki disease can be treated with a number of different drugs. IGIV can be delivered to Kawasaki disease patients as a form of treatment. IGIV treatment based on Harada Score. Kawasaki disease is a condition that is rarely recognized by the general public. The resulting conclusions are as follows Complete Kawasaki disease is diagnosed by five days of persistent fever plus 4 of the 5 classic symptoms. Screening with a scoring system is needed in making decisions about giving IGIV.

Keywords: Kawasaki disease, Harada score, intravenous immunoglobulin

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Pendahuluan

Kawasaki disease (KD) is an acute vasculitis with an unidentified cause 1. In 1967, Dr. Tomisaku Kawasaki first described Kawasaki disease; however, its cause is still unknown. Nearly all children of all races and ethnicities around the globe have reportedly suffered from Kawasaki disease (Newburger et al., 2004). Children under two years old, especially those younger than six months, are at high risk of developing Kawasaki disease. Kawasaki disease is also commonly referred to as lymph node syndrome, polyarteritis, and mucocutaneous knot disease (Trihono et al., 2013). Non-immediate treatment of Kawasaki disease might influence the occurrence of coronary heart events, heart artery anomalies, coronary thrombosis, coronary stenosis, and myocardial infarction; nevertheless, the most devastating consequence of untreated Kawasaki disease is death. Kawasaki disease is the most common cause of congenital heart disease in children 2 (Ramandika, 2012).

The occurrence of a protein homeostasis system can account for Kawasaki disease. This is due to an infection caused by an unidentified pathogen, which creates pathogenic proteins that can subsequently disseminate and bind to coronary artery endothelial cells, which are the pathogen's primary target (Setyoboedi et al., 2023). In Japan, the occurrence of Kawasaki disease is believed to be influenced by genetic factors, as alterations in gene expression have been found in certain children with Kawasaki disease that influence the vulnerability of a child to the disease (Shabariah, 2021).

The level of parental and societal understanding of Kawasaki disease remains low. Symptoms of Kawasaki disease can occasionally lead to misdiagnosis. Measles, mumps, and allergies are frequently mentioned in relation to the incidence of Kawasaki disease. This misdiagnosis can be reduced if parents have a good awareness of the symptoms and signs of the disease, as this disease cannot be underestimated (Liu et al., 2022).

The prevalence of Kawasaki disease is greater in developed countries or regions, also known as developed areas. Some countries, such as Japan and the United States, have relatively high populations compared to others. In Japan, there are 112 instances of Kawasaki disease per 100,000 children under the age of five. The incidence rate of Kawasaki disease in the United States is likewise fairly high, ranging from 9.1 to 32.5% per 100,000 children under the age of five. Kawasaki disease is more prevalent in the Jabodetabek region of Indonesia, with an incidence of 5,000 cases per year; however, only 2% have access to treatment. Throughout 2021, two cases of complete Kawasaki were identified at Perkebunan Jember Klinik Hospital. Using a Harada score of 3, intravenous immunoglobulin (IGIV) treatment screening was calculated. IGIV is advised when the Harada score is 4 3. In general, IGIV is used to reduce the risk of abnormalities/damage to the coronary arteries. Administration of IGIV should be initiated as soon as possible. This study will examine the delivery of IGIV to children diagnosed with Kawasaki disease. (Rigante et al., 2016)

The purpose of this study is to identify the diagnostic criteria and indications for administering IGIV to children with Kawasaki disease. This indicates that this research report provides instructions on how to identify patients who are allowed to receive IGIV and how to assess the condition of patients who are still not deemed to need IGIV treatment based on the Harada value received from examination results.

Metode Penelitian

The method used in this research qualitative method. The approach of the research is the case report method (Yusanto, 2020). There are 2 cases of Kawasaki Disease found at Perkebunan Jember Klinik Hospital. The research used primary data collected by field observation (Wahidmurni, 2017). The observation lasted 5 months. The observation begins by identifying the main complaint, next by doing some physical examination, and laboratory examination. The examination purposed to distinguish the Kawasaki disease symptoms from the others disease symptoms. The research's subject is two boys. One of them is 1 year old, and the other one is 7 months old. The research's object is Kawasaki Disease symptoms and Harada score of patients with Kawasaki Disease symptoms.

Hasil Dan Pembahasan

Hasil

Case Report 1 concerns a one-year-old boy. The patient's parents reported that the child had a fever for five consecutive days. The findings of the examination revealed that the *patient had erythematous fissure lips* and strawberry tongue in his mouth and tongue. Also present are erythema*, peripheral edema, and lymphadenopathy.* Laboratory tests performed on the child indicated that the c-reactive protein level was 71.29 mg/L, the leukocyte level was 12,110 mm ^{3}, the platelet level was 304,000 x $^{10\ 3}$, the Hct level was 36.5%, the albumin level was 3.7 g/L, and the ASTO levels were negative. The patient's lack of cooperation prevented an echocardiographic examination from being performed. With a Harada score of 5, he was diagnosed with Kawasaki disease. The patient is eligible for intravenous immunoglobulin (IGIV) based on the displayed Harada values and the diagnosis. While the patient was at Perkebunan Jember Klinik Hospital, supportive therapy was given, but the patient's temperature did not decrease. On day three, the patient was given IGIV at a rate of 2g/kg/bb over 12 hours. Next, he took Aspirin at a dose of 80 mg/kgbb/day, followed by 3-5 mg/kgbb/day. After the combined therapy was done, there were indications that the child's temperature had decreased, and it was possible that the child was no longer experiencing fever. Figures 1 and 2 depict a sampling of the findings from the physical examination of patient 1.

Figure 1. Bilateral Conjunctivitis without Exudate

Figure 2. Beau's line in the convalescent phase

The second case involved a 7-month-old boy. The patient came to Perkebunan Jember Klinik Hospital with a five-day history of persistent fever. The patient had *erythematous fissure lips* and strawberry tongue, as well as bilateral conjunctivitis, according to the medical staff's physical examination. In addition to a polymorphic rash, peripheral erythema and edema, cervical lymphadenopathy, and bcg reactivation, the patient also had a polymorphic rash, peripheral erythema and edema, and cervical lymphadenopathy. The laboratory tests revealed that the c-reactive protein level was 18.09 mg/L and that the leukocyte count was 18.660 mm ^{3}. The platelet count was 393,000x10 ^{3} /L, the hemoglobin concentration was 36.9%, the albumin concentration was 3.6 g/L, and ASTO was negative. The results of the echocardiographic test remained within normal limits. Due to Harada score of 4, the patient has been diagnosed with Kawasaki disease. If Harada score is less than 4, IGIV is not suggested; thus, supportive care is the treatment of choice for this patient's Kawasaki disease. In addition, by giving Aspirin 80mg/kgbb/day followed by 3-5mg/kgbb/day, the patient was deemed free of fever after being given *supportive* medication. Figures 3 and 4 depict the description of the results of the physical examination of the second patient.

Gambar 3. *Fissura lips eritrematous*

Gambar 4. *BCG Reactivation*

Table 1 provides a summarized comparison of the examination results for patients 1 and 2. The comparison involves a comparison of both complaints and test results. Examination comparisons include physical examination results, laboratory examination results, echocardiographic examination results, Harada scores, and management.

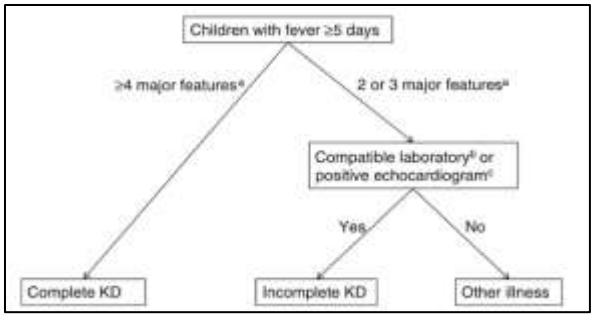
Table 1. Comparison of Examination of Patient 1 and Patient 2

		Patient 1	**patient 2**
Identity		boy, 1 year old	boy, 7 months old
Main complaint		5 days of persistent fever	5 days of persistent fever
Physical examination	*Erythematous fissure lips* and strawberry tongue	(+)	(+)
	Bilateral conjunctivitis	(+)	(+)
	Polymorphic rash	(-)	(+)
	Peripheral erythema and edema	(+)	(+)
	Cervical lymphadenopathy	(+)	(+)
	BCG reactivation	(-)	(+)
Laboratory examination	*C-reactive protein* (mg/L)	71,29	18.09
	Leukocytes (mm ^{3})	12110	18,660
	Platelets (x10 ^{3}/L)	304,000	393,000
	Hct (%)	36.5	36,9
	Albumin (g/L)	3,7	3.6
	ASTO	Negative	Negative

	Patient 1	**patient 2**
Echocardiography	Not done (uncooperative patient)	Within normal limits
Harada's score	5	4
Diagnosis	Kawasaki disease	Kawasaki disease
Governance	• *Supportive* therapy, the fever does not go down • D-3 treatment given IGIV 2g/kg/bb for 12 hours • Aspirin 80 mg/kg/day followed by 3-5 mg/kg/day • Free of fever after administration of combination therapy	• *Supportive* therapy • Aspirin 80 mg/kg/day followed by 3-5 mg/kg/day • *supportive* therapy

Patients diagnosed with Kawasaki disease must receive therapy and care based on their symptoms and conditions. Intravenous immunoglobins (IGIV) are one of the therapeutic options for Kawasaki disease. However, giving IGIV as described requires consideration of various factors, most notably Harada value. Before delivering IGIV, it must be determined whether or not the patient has Kawasaki disease. Early detection is necessary performed. If a pediatric patient has had a fever for more than five days and more than four common symptoms of Kawasaki disease are present, it is certain that the kid has Kawasaki disease. If a child has a fever for more than five days, but the overall symptoms are still less than four, an echocardiogram should be performed to establish whether or not the child has Kawasaki disease. If the results of the echocardiogram are positive, it can be assumed that the patient has Kawasaki disease. However, if the results of the echocardiogram are negative, it is possible that the patient is suffering from other diseases, and further examination is required for the management of each potential disease.

Figure 5. Algorithm for the Diagnosis of Kawasaki Disease



Kawasaki disease can be treated with a number of different drugs. IGIV can be delivered to Kawasaki disease patients as a form of treatment. Administration of IGIV requires careful consideration. Giving IGIV in Japan is determined by Harada value and the risk factors. The use of Harada values and risk variables in IGIV procedures in Japan is illustrated in Table 2 in better detail.

Table 2. Harada Scoring System

Country	Scoring system	Risk factor	Points	Predicted Risk	Sensitivity	specificity
Japan	Harada's value	WBC >12x10 ^{9} /L	1	Low Risk (0-3)	91%	30%
		PLT <350x10 ^{9} /L	1	Height ≥ 4		
		CRP>30mg/L	1			
		Hct<35%	1			
		Alb<35 g/L	1			
		Age ≤ 12 months	1			
		Male gender	1			

Pembahasan

Pembahasan merupakan bagian terpenting dari keseluruhan isi artikel ilmiah. Komponen informasi yang ada di pembahasan, yaitu: pustaka terkait hipotesis utama, review temuan yang paling penting, penjelasan yang paling logis berdasarkan teori atau ilmu pengetahuan yang ada, serta spekulasi kemungkinan yang logis dari hasil/ temuan. Memberi batasan dari generalisasi yang terlalu jauh dari hasil temuannya, penjelasan implikasi dari hasil risetnya, rekomendasi dari riset selanjutnya, fokus pada hasil utamanya, dan kemudian hubungkan pesan atau simpulan hasil utamanya dengan tujuan dan judul naskah.

Simpulan

Kawasaki disease is a condition that is rarely recognized by the general public. Several conclusions can be drawn from the case that occurred at Perkebunan Jember Klinik Hospital based on the offered research. The resulting conclusions are as follows complete Kawasaki disease is diagnosed by five days of persistent fever plus 4 of the 5

classic symptoms. Screening with a scoring system is needed in making decisions about giving IGIV.

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