

Protocole National de Diagnostic et de Soins

Maladie de KAWASAKI



2021

Ce PNDS a été rédigé sous l'égide de :

Centre de Référence des Maladies Auto-inflammatoires et de l'Amylose inflammatoire CeRéMAIA

Sous l'égide de la Filière des maladies auto-immunes et auto-inflammatoires rares FAI²R

Liste des personnes ayant collaboré à la rédaction du PNDS « Maladie de Kawasaki »

Ce PNDS a été coordonné par le Docteur Caroline GALEOTTI et par le Professeur Isabelle KONE-PAUT

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Déclarations d'intérêt

Tous les participants à l'élaboration du PNDS ont rempli une déclaration d'intérêt. Les déclarations d'intérêt sont en ligne et consultables sur le site internet du(des) centre(s) de référence.

Objectifs du protocole national de diagnostic et de soins

L'objectif de ce protocole national de diagnostic et de soins (PNDS) est d'explicitier aux professionnels concernés la prise en charge diagnostique et thérapeutique optimale actuelle et le parcours de soins d'un patient atteint de maladie de Kawasaki. Il a pour but d'optimiser et d'harmoniser la prise en charge et le suivi de la maladie rare sur l'ensemble du territoire. Il permet également d'identifier les spécialités pharmaceutiques utilisées dans une indication non prévue dans l'Autorisation de mise sur le marché (AMM) ainsi que les spécialités, produits ou prestations nécessaires à la prise en charge des patients mais non habituellement pris en charge ou remboursés.

Ce PNDS peut servir de référence au médecin traitant (médecin désigné par le patient auprès de la Caisse d'assurance maladie) en concertation avec le médecin spécialiste notamment au moment d'établir le protocole de soins conjointement avec le médecin conseil et le patient, dans le cas d'une demande d'exonération du ticket modérateur au titre d'une affection hors liste.

Le PNDS ne peut cependant pas envisager tous les cas spécifiques, toutes les comorbidités ou complications, toutes les particularités thérapeutiques, tous les protocoles de soins hospitaliers, etc. Il ne peut pas revendiquer l'exhaustivité des conduites de prise en charge possibles, ni se substituer à la responsabilité individuelle du médecin vis-à-vis de son patient. Le protocole décrit cependant la prise en charge de référence d'un patient atteint de maladie de Kawasaki. Il doit être mis à jour en fonction des données nouvelles validées.

Le présent PNDS a été élaboré selon la « Méthode d'élaboration d'un protocole national de diagnostic et de soins pour les maladies rares » publiée par la Haute Autorité de Santé en 2012 (guide méthodologique disponible sur le site de la HAS : www.has-sante.fr).

Méthode de travail

Le présent PNDS a été élaboré selon la « Méthode d'élaboration d'un protocole national de diagnostic et de soins pour les maladies rares » publiée par la Haute Autorité de Santé en 2012 (guide méthodologique disponible sur le site de la HAS : www.has-sante.fr).

Une réunion de mise en place en visioconférence avec les coordinatrices a permis de déterminer le plan du PNDS, la liste des rédacteurs pour chacune des parties/spécificités du PNDS ainsi que la liste des relecteurs.

Durant la phase de rédaction, chaque rédacteur a réalisé une analyse de la littérature en langue anglaise et française avant de rédiger la partie du PNDS correspondante.

A l'issue de la rédaction, toutes les parties du PNDS ont été assemblées puis homogénéisées par les coordinatrices.

Durant la phase de relecture, chacun des rédacteurs et relecteurs a commenté la première version du PNDS.

A l'issue de la relecture, les coordinatrices ont pris en compte tous les commentaires pour produire la deuxième version du PNDS.

Une journée et demi de finalisation s'est enfin tenue (en visioconférence), où tous les rédacteurs et relecteurs étaient conviés, afin de refaire une revue complète et collégiale du texte pour en produire une version finalisée à publier.

Tableau 1. Recommandations de bonne pratique

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Auteur, année, référence, pays	Objectif	Stratégie de recherche bibliographique renseignée (Oui / Non)	Recueil de l'avis des professionnels (Oui / Non ; Lesquels)	Recueil de l'avis des patients (Oui / Non)	Populations et techniques (ou produits étudiés)	Résultats (avec grade des recommandations si disponible)
Brogan, 2020, (17), GB	Recommandations de suivi cardiovasculaire au long cours après une MK	Oui	Oui : experts britanniques	Non	Non	Guidance on the long-term management of patients who have vascular complications of KD and guidance on the emergency management of acute coronary complications.
Cecconi, 2014, (27), GB	Consensus sur la prise en charge du choc hémodynamique	Oui	Oui : 12 experts – approche DELPHI	Non	Non	This consensus provides 44 statements that can be used at the bedside to diagnose, treat and monitor patients with shock.

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De Graeff, 2019, (46), Europe	Recommandations européennes sur le diagnostic et la prise en charge de la MK	Oui	Oui : 17 experts	Non	Non	The Single Hub and Access point for paediatric Rheumatology in Europe initiative provides international evidence-based recommendations for diagnosing and treating KD in children, facilitating improvement and uniformity of care.
Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents, 2011, (57)	Recommandations sur la prise en charge cardiovasculaire des enfants et adolescents	Oui	Oui : groupe d'experts	Non	Non	Recommandations gradées sur la prise en charge cardiovasculaire des enfants et adolescents
Fukazawa, 2020, (64), Japon	Recommandations sur le diagnostic et la prise en charge des complications cardiovasculaire de la MK au long cours	Oui	Oui : groupe d'experts	Non	Non	Recommandations sur le diagnostic et la prise en charge des complications cardiovasculaire de la MK au long cours

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McCrindle, 2017, (112), International	Recommandations sur le diagnostic, la prise en charge et le suivi au long cours de la MK	Oui	Oui : groupe d'experts	Non	Oui	These recommendations provide updated and best evidence-based guidance to healthcare providers who diagnose and manage Kawasaki disease, but clinical decision making should be individualized to specific patient circumstances.
Newburger, 2004, (124), USA	Recommandations sur le diagnostic, la prise en charge et le suivi au long cours de la MK	Oui	Oui : groupe d'experts	Non	Oui	Recommendations for the initial evaluation, treatment in the acute phase, and long-term management of patients with Kawasaki disease are intended to assist physicians in understanding the range of acceptable approaches for caring for patients with Kawasaki disease.

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Ozen, 2006, (134), GB	Critères de classification des vascularites pédiatriques	Oui	Oui : groupe d'experts, méthode Delphi	Non	Oui	Final criteria were developed to classify a child as HSP, KD, childhood PAN, WG, or TA, with changes introduced based on paediatric experience.
Ravelli, 2016, (143), Europe	Critères de SAM au cours de l'AJI systémique	Oui	Oui : groupe d'experts	Non	Oui	We have developed a set of classification criteria for MAS complicating systemic JIA and provided preliminary evidence of its validity.

Tableau 2. Revues systématiques de la littérature

Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Altammar, 2018, (7), Canada	MK chez les nouveaux-nés	Oui	Oui	NA	MK durant la période néonatale	Importance of considering the diagnosis of KD in the first month of life, as appropriate treatment can result in resolution of symptoms and a decreased risk of cardiac complications.
Bayers, 2013, (14), USA	Mise au point sur la MK aux USA	Non	Non	NA	NA	Focus on the epidemiology of Kawasaki disease in the United States as it relates to other countries, the diagnosis of Kawasaki disease, its clinical course, and the currently accepted theories of pathogenesis. A particular focus is given to the various dermatologic manifestations that may occur.
Chen, 2016, (33), Taïwan	Efficacité des corticoïdes au cours de la MK (méta-analyse)	Oui	2746 patients	NA	Pourcentage d'anomalies coronaires	This study highlights the importance of timing to prevent coronary artery complication in treating KD. High-risk patients with KD benefit greatly from a timely and potent adjunctive corticosteroid therapy strategy.

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Chen, 2013, (34), Taïwan	Efficacité des corticoïdes + IgIV au cours de la MK (méta-analyse)	Oui	1011 patients	NA	Pourcentage d'anomalies coronaires	Combination of corticosteroid with the conventional regimen of IVIG as an initial treatment strategy could reduce the risk of coronary abnormality.
Eleftheriou, 2014, (55), GB	Mise au point sur la prise en charge de la MK	Oui	Non	NA	NA	This paper summarises recent advances in the understanding of KD pathogenesis and therapeutics, and provides an approach for managing KD patients in the UK in the light of these advances.
García-Pavón, 2017, (68), Mexique	SAM et MK ; revue de la littérature	Oui	Oui	Non	NA	The persistence of fever with splenomegaly, hyperferritinemia, thrombocytopenia, and elevated aspartate aminotransferase (AST) should prompt the consideration of MAS complicating KD.
Jia, 2020, (78), Chine	Efficacité aspirine au cours de la phase aigüe de la MK : méta-analyse	Oui	Oui	Aspirine low-dose ou high-dose + IgIV	Efficacité	Low-dose aspirin plus IVIG might be as effective as high-dose aspirin plus IVIG for the initial treatment of Kawasaki disease. Considering that high-dose aspirin may cause more adverse reactions than low-dose aspirin, low-dose aspirin plus IVIG should be recommended as the first-line therapy in the initial treatment of Kawasaki disease.

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Jindal, 2019, (80), Inde	Revue de la littérature sur les formes atypiques et incomplètes de MK	Oui	Oui	Non	NA	Diagnosis of KD is essentially clinical and based on recognition of typical clinical features that may appear sequentially and all signs and symptoms may not be present at one point of time. There is no confirmatory laboratory test for diagnosis of this condition. Further complicating the picture is the fact that incomplete and atypical forms KD may be seen in up to 50% patients.
Kim, 2019, (87), Corée	Mise au point sur l'épidémiologie de la MK	Oui	Oui	NA	NA	Knowing the true epidemiology of KD in each country and the availability of publications of KD epidemiology also could benefit general health care providers and general population.
Lin, 2015, (99), Taïwan	BNP et MK	Oui	Oui	NA	Performance du BNP dans le diagnostic de MK	Current evidence suggests that NT-proBNP may be used as a diagnostic tool for KD. NT-proBNP has high diagnostic value for identifying KD in patients with protracted undifferentiated febrile illness.

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Piram, 2021, (138), Canada-France	Peau et MK	Non	Non	NA	NA	We review the skin manifestations described for KD and perform an overview of pathophysiological advances and new treatments.
Piram, 2012, (139), France	Mise au point sur la MK	Non	Non	NA	NA	Mise au point sur la MK en 2012
Smith, 2014, (159), Canada	Revue de la littérature sur la surdité au cours de la MK	Oui	Oui	NA	NA	This systematic review would suggest there is an association between KD and SNHL.
Tirelli, 2020, (173), Italie	Mise au point sur la MK	Non	Non	NA	NA	Mise au point sur la MK en 2020
Uehara, 2012, (179), Japon-USA	Epidémiologie de la MK	Non	Non	NA	NA	The purpose of this review is to describe the epidemiologic features of KD—particularly its incidence, seasonality, and the occurrence of coronary artery abnormalities—primarily in Japan and the United States, but also in Europe and other Asian countries.
Yan, 2019, (193), Chine	Revue de la littérature des facteurs de risque d'anévrismes	Oui	Oui	NA	Anévrismes coronaires	We report four risk factors for CAA and a protective factor against CAA in children with KD.

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
	coronaires au cours de la MK					

Tableau 3. Etudes cliniques

Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Ae, 2020, (2), Japon	Etude descriptive de la MK	Etude rétrospective	32528 patients	NA	NA	The annual number of patients developing Kawasaki disease in Japan increased from 1970 through 2018, whereas the proportion of patients with Kawasaki disease with cardiac complications decreased in the most recent 2 decades. Early diagnosis of Kawasaki disease as well as advances in initial treatments could explain these findings.
Akagi, 1990, (4), Canada	Atteinte cardiaque valvulaire au cours de la MK	Etude rétrospective	1215 patients	NA	NA	We postulate that two different mechanisms may be responsible for the variation in the duration of valvular heart disease: one, which disappeared spontaneously, was attributed to pancarditis; the other, which persisted, was due to dysfunction in valve and papillary muscles as a result of ischemia.
Akagi, 1992, (5), Canada	Atteinte coronaire au décours de la MK	Etude rétrospective	583 patients	NA	NA	These findings suggest that the severity of coronary artery involvement during the initial stages of Kawasaki disease influences the regression of these lesions, and that immune globulin treatment may improve outcome by reducing the incidence of severe lesions.
Alves, 2011, (8), Brésil	Complications au cours de la MK	Etude prospective	115 patients	NA	NA	KD may progress with several complications even within months of the disease acute phase, eventually resulting in permanent

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
						sequelae. The earlier the diagnosis and therapeutic intervention with IV IgG administration are, the lower will be the occurrence of complications.
Bajolle, 2012, (11), France	Efficacité de l'ETP sur l'équilibre de l'INR en pédiatrie	Etude prospective	104 patients	ETP sur les AVK	Durée avec INR en zone thérapeutique, effets indésirables et adhésion au ttt	This non-selective child-focused EP for VKA therapy, strongly supported by our dedicated game, is useful in maintaining efficacy, safety and compliance to anticoagulation and its monitoring.
Baker, 2003, (12), USA	Qualité de vie au cours de la MK	Etude prospective descriptive	201 patients	Auto-questionnaires	NA	KD patients without coronary artery aneurysms were similar to the general population in their general physical and psychosocial health. However, the parents of children in all KD groups reported lower general health perceptions than parents in the US population sample, suggesting that long-term concerns about their children's health exist regardless of overall health status. In addition, children with giant coronary artery aneurysms had lower overall physical summary scores.
Banks, 2012, (13), Canada	Activité physique au cours de MK	Etude prospective descriptive	27 patients et 27 contrôles	NA	NA	Physical activity counseling should be a focus of management for children with a history of KD.

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Bratincsak, 2012, (16), USA	Anévrisme coronaires au cours de la MK	Etude prospective bi-centrique	145 patients et 45 contrôles (enfants avec fièvre)	Echographie cardiaque	Mesure des coronaires	Echocardiographic evidence of coronary artery dilation can be used to support the diagnosis of KD. No febrile child had a coronary artery Z-score ≥ 2.5 SD units.
Burns, 1984, (19), USA	Coagulopathie et risque d'anévrisme coronaire au cours de la MK	Etude prospective	31 patients	Etude de la coagulation et de l'activation plaquettaire	Présence d'anévrisme coronaire	An elevated Plasma beta-thromboglobulin (BTG) during the first 3 weeks after onset of fever was highly associated with aneurysm formation in our patients (P less than 0.007). No aneurysms occurred in patients with a normal BTG value.
Burns, 1985, (20), USA	Uvéite antérieure et MK	Etude prospective	41 patients	Examen ophtalmologique	Présence d'uvéite antérieure	Slit lamp examination may be a helpful clinical tool in identifying patients with Kawasaki syndrome, and uveitis should be considered for inclusion in the Centers for Disease Control case definition of Kawasaki syndrome.
Burns, 1991, (21), USA	Caractéristiques au diagnostic de la MK	Etude de comparaison de cas, multicentrique	280 patients et 42 contrôles	NA	NA	(1) Measles and streptococcal infection should be excluded in patients examined for possible KD. (2) Laboratory studies that may be useful in discriminating patients with KD from those with alternative diagnoses include hemoglobin concentration, erythrocyte sedimentation rate, and serum alanine aminotransferase activity.
Burns, 1996, (22), USA	Description des séquelles de la MK	Etude rétrospective	74 patients	NA	NA	The acute vasculitis of Kawasaki disease can result in coronary artery damage and rheologic changes

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						predisposing to thrombus formation or progressive atherosclerotic changes that may remain clinically silent for many years. Coronary artery aneurysms and calcification on chest radiography were unusual features in this group of patients. A history of antecedent Kawasaki disease should be sought in all young adults who present with acute myocardial infarction or sudden death.
Cai, 2011, (23), Chine	Caractéristiques de la MK chez les grands enfants	Etude rétrospective	113 patients	NA	NA	For some reasons, KD in older children was difficult in early diagnosis and treatment. Also, older children may have a more marked inflammatory response and those treated with IVIG were more likely to require repeated IVIG treatment. And probably because of all these, older patients with KD had a higher prevalence of coronary artery abnormalities than the younger patients.
Capannari, 1986, (24), USA	Se, Sp et VPP de l'ETT dans la détection des anévrismes coronaires de la MK	Etude rétrospective	77 patients	ETT	Anévrismes coronaires	Two-dimensional echocardiography is a sensitive and specific test for detecting aneurysms in the proximal portions of both the right and left coronary arteries, and is useful in selecting patients for invasive investigation with selective coronary arteriography.

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Carbone, 2011, (25), Italie	Intérêt de l'angioscanner pour le suivi coronaire de la MK	Etude prospective	12 patients	Artériographie initiale puis angioscanner	Comparaison des 2 techniques	In an adequately selected patient population, the role of CCA could be limited almost only to therapeutic procedures.
Carlton-Conway, 2005, (26), GB	Séquelles comportementales après une MK	Etude prospective	65 patients et 40 contrôles	Autoquestionnaires		Kawasaki disease can be associated with significant behavioural sequelae. This is an important consideration in the long-term follow up and referral to a clinical psychologist may be necessary in selected patients.
Chahal, 2010, (29), Canada	Expérience des parents au cours de la MK	Etude rétrospective	25 parents de 17 patients	Entretiens, questionnaires	Mesure de l'anxiété parentale	There remains a critical need for richly textured research data on the perspective and experience of families of children with KD.
Chang, 2014, (30), Taïwan	Infections virales et MK	Etude prospective	226 patients et 226 contrôles	PCR virales		We found that some common respiratory viruses, such as adenoviruses, enteroviruses, rhinoviruses, and coronaviruses, were associated with KD cases.
Chen, 2012, (32), Taïwan	Echographie vésiculaire et résistance aux IgIV au cours de la MK	Etude rétrospective	77 patients	Echographie vésiculaire	Résistance aux IgIV	Sonographic gallbladder abnormalities are associated with higher CRP, GPT, neutrophil and IVIG resistance in KD. It can be used as a predictor of IVIG resistance in patients with KD.
Cherqaoui, 2021, (35), France	Description des différences entre PIMS et MK	Etude rétrospective	425 MK et 404 PIMS	NA	NA	On clinical grounds, KD-HIS, KD-ICU and PIMS might belong to a common spectrum of non-specific pathogen-triggered hyperinflammatory states. The causes of increasing inflammation severity within the three entities

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						and the different effects on the heart remain to be determined.
Cheung, 2004, (36), Chine	FDRCV après MK	Etude prospective	37 patients MK avec anomalies coronaires, 29 patients MK sans anomalies coronaires, 36 contrôles	NA	Présence de FDRCV	An adverse cardiovascular risk profile, as characterized by a proatherogenic alteration of the lipid profile and increased arterial stiffness, occurs in children after KD. The profile is worse in those with than in those without coronary aneurysms.
Choi, 2015, (37), Corée	Comparaison des patients MK avec ou sans uvéite	Etude prospective	110 patients (32 avec uvéite)	NA	Caractéristiques cliniques et paracliniques	Uveitis is an important ocular sign in the diagnosis of incomplete KD. It is significantly associated with patient age and neutrophil count.
Chuang, 2016, (40), Taïwan	Insuffisance rénale aigue au cours de la MK	Etude prospective	332 patients	NA	Survenue d'une IRA	This study demonstrated that AKI exists in substantial proportion of patients with KD. Young age and high alanine transaminase level are the main associated factors for AKI in these patients.
Crystal, 2008, (41), Canada	Suivi ECG et ETT après une MK	Etude prospective	176 patients	ECG et ETT x3 dans l'année après le diagnostic		While systolic ventricular dysfunction may not be evident, subclinical myocardial involvement may be indicated by subtle ventricular dilation and repolarization abnormalities.
Dallaire, 2011, (42), Canada	Elaboration de nouvelles équations de mesure du Z-score des coronaires	Etude prospective	1033 enfants sains	ETT		This study shows two valid methods to estimate Z scores for CA size in children of all ages. Such Z scores are important for risk stratification in patients with Kawasaki disease.

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Davies, 2015, (44), GB	Prédiction de la résistance aux IgIV	Etude rétrospective	78 patients	NA	NA	The KS does not predict IVIG resistance or CAA in our population.
Dengler, 1998, (48), USA	Etude du LCR au cours de la MK	Etude rétrospective	46 patients	NA	Paramètres us LCR	In the present series approximately one-third of KD patients who underwent an LP had CSF pleocytosis with a mononuclear cell predominance. No patient had significant hypoglycorrhachia, and elevation of the CSF protein was uncommon. CSF abnormalities were similar between US and Japanese KD patients. The basis for the CSF pleocytosis in acute KD patients remains unknown.
Dominguez, 2008, (49), USA	Caractéristiques des patients MK admis en soins intensifs	Etude cas-contrôle	423 patients	NA	Caractéristiques cliniques et paracliniques	Patients who have Kawasaki disease and are admitted to the ICU are at increased risk for intravenous immunoglobulin-refractory disease and may be at risk for development of more severe coronary artery disease.
Downie, 2017, (50), Canada	Facteurs de risque d'anévrismes coronaires au cours de la MK	Etude rétrospective	1358 patients	NA	Anévrismes coronaires	Factors associated with the development of CA aneurysms are generally similar for those treated promptly versus those with delayed or no treatment. For those with delayed diagnosis, treatment with IVIG does not appear to be effective to prevent CA aneurysms.
Egami, 2006, (52), Japon	Score de prédiction de la résistance aux	Etude rétrospective	2180 patients	NA	Résistance aux IgIV	Resistance to IVIG treatment can be predicted using age, illness days, platelet count, ALT, and CRP.

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	IgIV au cours de la MK					Randomized, multicenter clinical trials are necessary to create a new strategy to treat these high-risk patients.
Eladawy, 2011, (53), USA	Anomalies du bilan hépatique au cours de la MK	Etude rétrospective	259 patients	NA	Réponse thérapeutique	Abnormalities of LFTs (liver function test) are frequently found in patients with acute KD and children with abnormal LFTs were at higher risk for IVIG resistance.
Fabi, 2018, (58), Italie	Atteinte digestive au cours de la MK	Etude rétrospective	302 patients	NA	Evolution	This is the first multicenter report demonstrating that presenting gastrointestinal features in KD identify patients at higher risk for IVIG-resistance and for the development of coronary aneurysms in a predominantly Caucasian population.
Fernandez-Cooke, 2019, (59), Espagne	Description de la MK en Espagne	Etude rétrospective	625 patients	NA	Résistance aux IgIV et anévrismes coronaires	In our population, children under 12 months develop coronary aneurysms more frequently and children with KD with anemia and leukocytosis have high risk of cardiac involvement. Adding steroids early should be considered in those patients, especially if the treatment is not started before 8 days of fever. A score applicable to non-Japanese children able to predict the risk of aneurysm development and IVIG resistance is necessary.

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
Fraison, 2016, (61), France	MK de l'adulte en France	Etude rétrospective	43 patients	NA	Caractéristiques cliniques et paracliniques	Given the high frequency of cardiac involvement and complications in this series of AKD, diagnosis and treatment should not be delayed, and early IVIg treatment seems to improve the outcome.
Fujino, 2014, (62), Japon	Repolarisation ventriculaire au cours de la MH	Etude prospective	34 patients	IgIV	Etude de la repolarisation ventriculaire	Tp-e/QT was strongly related to transient coronary dilation, in comparison with inflammatory indicators including fever and CRP level.
Fujiwara, 1987, (63), Japon	Etude coronaire autopsique au cours de la MK	Etude autopsique	61 patients	NA	Etude coronaire	Twenty-three of 26 children with a coronary aneurysm 8 mm or larger had multivessel coronary aneurysms.
Furuyama, 2003, (65), Japon	TEP cardiaque au cours de la MK	Etude prospective	27 patients	TEP cardiaque		Our study indicates impaired MFR and endothelial function regardless of coronary artery status after KD.
Gámez-González, 2013, (66), Mexique	Description des MK en choc au Mexique	Etude rétrospective	214 patients	NA	Caractéristiques cliniques et paracliniques	Patients with KD presenting in shock seem to have an increase in gastrointestinal manifestations, incomplete presentation, IVIG resistance, and worse cardiac outcomes.
Hoshino, 2015, (72), Japon	Devenir à long terme des anévrysmes de la MK	Etude rétrospective	20 patients	NA	Caractéristiques cliniques et vasculaires	SAAAs occurred symmetrically and were multiple in younger infants and those with severe acute vasculitis. The fate of SAAAs resembles that of coronary artery aneurysms, and depends on the diameter during the acute phase. Larger SAAAs can lead to stenotic lesions in the late period.

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Huang, 2008, (74), Taïwan	Néphromégalie au cours de la MK	Etude prospective	20 patients et 15 contrôles	Echographie rénale	Taille des reins	These results confirm the presence of large kidneys in children with KD. Our data also suggest that an elevated HGF/TGF-beta1 ratio may be responsible for the transient nephromegaly in these children.
Iemura, 2000, (75), Japon	Devenir à long terme des anévrysmes coronaires de la MK ayant régressé	Etude rétrospective	27 patients et 6 contrôles	NA	Caractéristiques cliniques et angiographiques	There is evidence of persisting abnormal vascular wall morphology and vascular dysfunction at the site of regressed coronary aneurysms in patients with previous Kawasaki disease. These patients should be counselled to avoid potential risk factors for atherosclerosis, and long term follow up is needed into adult life.
Jaggi, 2013, (77), USA	Infection adénovirus humain au cours de la MK	Etude prospective	77 patients	PCR	Résultat PCR	In KD, molecular-based HAdV detection is not uncommon, may represent persistence of HAdV-C, and should be interpreted with caution. Together, quantitative polymerase chain reaction and HAdV typing may aid in distinguishing HAdV disease mimicking KD from KD with concomitant HAdV detection.
Kamiyama, 2018, (82), Japon	Transition et MK	Etude prospective	48 experts de la MK	Questionnaire	Conditions de la transition	Adult cardiologists began managing patients with CAL after KD in more than half of the institutes in this study. Pediatricians should construct a support program for better management of these patients and for cooperation with

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						cardiologists to prevent loss to follow up.
Kanegaye, 2013, (83), USA	Description de la forme atypique de MK (ganglionnaire)	Etude prospective	57 patients + 78 contrôles avec hémopathie + 287 contrôles avec MK typique	NA	Caractéristiques cliniques, biologiques et devenir	High ABC and CRP values and multiple enlarged solid nodes in febrile patients with cervical adenopathy should prompt consideration of NFKD to prevent delayed diagnosis of KD. Retropharyngeal edema on radiography should not dissuade from the diagnosis of NFKD.
Kato, 2012, (85), Japon	Scanner au cours de la MK avec adénopathies cervicales	Etude rétrospective	12 patients	Scanner cervical	Caractéristiques cliniques, biologiques et scannographiques	Cervical lymphadenopathy in Kawasaki disease usually showed unilateral distribution predominantly at levels II, III, and V with perinodal infiltration occasionally accompanied by retropharyngeal hypodense area, peritonsillar hypodense area, and enlarged tonsils.
Kemmotsu, 2011, (86), Japon	Méningite aseptique post-IVIg au cours de la MK	Etude rétrospective	384 patients	NA	Caractéristiques cliniques, biologiques et devenir	In our patients with Kawasaki disease, aseptic meningitis induced by IVIG occurred within 48 hours after initiation of IVIG, resolved within a few days, and resulted in no neurological complications, even in patients who did not receive medical treatment.
Kim, 2012, (88), Corée	Co-infections par virus respiratoire au cours de la MK	Etude prospective	55 patients + 78 contrôles	RT-PCR	Caractéristiques cliniques, biologiques et devenir	A positive RT-PCR for currently epidemic respiratory viruses should not be used as an evidence against the diagnosis of KD. These viruses were not associated with the

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						incomplete presentation of KD and coronary artery dilatation.
King, 2000, (91), Canada	Effet de la MK sur les compétences cognitives et comportementales	Etude de cohorte	22 patients	Tests psychométriques	Performances psychométriques	While no effect on cognitive development or academic performance was demonstrated, these results provide preliminary indication of a post-Kawasaki disease deficit in internalizing and attentional behavior.
Kobayashi, 2016, (92), Japon	Détermination de Z-score pour les artères coronaires	Etude prospective	3851 enfants sains	Echographie cardiaque	Mesures des coronaires	Novel LMS models with which to estimate the sex-specific Z score of each internal coronary artery diameter were generated and validated using a large pediatric population.
Kobayashi, 2006, (93), Japon	Modèle prédictif de résistance aux IgIV au cours de la MK	Etude rétrospective	546 patients puis 204 patients (cohorte de validation)	NA	Caractéristiques cliniques, biologiques et devenir	Our predictive models showed high sensitivity and specificity in identifying IVIG nonresponders among KD patients.
Kobayashi, 2012, (94), Japon	Efficacité IgIV+CT pour prévenir les anévrismes coronaires au cours de la MK	Etude prospective	248 patients	IgIV ou IgIV+CT	Caractéristiques cliniques, biologiques et devenir	Addition of prednisolone to the standard regimen of intravenous immunoglobulin improves coronary artery outcomes in patients with severe Kawasaki disease in Japan.
Lin, 2015, (100), Taïwan	Diagnostic différentiel entre KDSS et TSS	Etude rétrospective	17 KDSS et 16 TSS	NA	Caractéristiques cliniques, biologiques et devenir	Echocardiography, anemia and thrombocytosis are useful early differentiating features between KDSS and TSS patients.
Loh, 2019, (102), Singapour	BCG et MK	Etude rétrospective	661 patients	NA	Réaction au site d'injection du BCG	BCG site reaction or induration is a useful clinical clue for the diagnosis of KD in both infants and older

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						children, with a higher prevalence in infants.
Mammadov, 2020, (104), Chine	Bilan hépatique et MK	Etude rétrospective	210 patients	NA	Caractéristiques cliniques, biologiques	Hepatic dysfunction is a common complication during the acute KD episode, characterized by elevated serum liver enzymes, hypoalbuminemia and hyperbilirubinemia. Systemic inflammation and aspirin, rather than infectious agents, are both the major contributors of hepatic dysfunction secondary to KD. A lower A/G serves as an independent predictor of CAAs.
Manlhiot, 2010, (105), Canada	Classification des anévrismes coronaires de MK selon le Z-Score	Etude rétrospective	1356 patients	NA	Mesures coronaires	This classification seems to appropriately apply to the circumflex branch despite a lack of normal values for this branch. The current AHA classification might not accurately classify CAAs in KD patients.
McCrindle, 2007, (111), Canada	Anomalies coronaires au cours de la MK	Etude prospective	190 patients	ETT	Caractéristiques cliniques, biologiques et mesures coronaires	Analyses of serial normalized coronary artery measurements in optimally treated Kawasaki disease patients demonstrated that for most patients, measurements are greatest at baseline and subsequently diminish; baseline measurements appear to be good predictors of involvement during early follow-up. When a more precise assessment is used, risk factors for coronary artery involvement are similar to those

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
						defined with arbitrary dichotomous criteria.
Minich, 2007, (114), Canada-USA	Facteurs de risque de retard diagnostique au cours de la MK	Etude rétrospective	589 patients	NA	Caractéristiques cliniques, biologiques	These findings underscore the need to maintain a high index of suspicion of Kawasaki disease in the infant who is younger than 6 months and has prolonged fever even with incomplete criteria.
Mori, 2011, (116), Japon	SIADH et MK	Etude rétrospective	39 patients	NA	Caractéristiques cliniques, biologiques	SIADH is common as a cause of hyponatremia in acute KD
Mori, 2004, (117), Japon	Efficacité des IgIV dans la prévention des anévrysmes coronaires au cours de la MK (méta-analyse)	Etude rétrospective	4020 patients	NA	Caractéristiques cliniques, biologiques et coronaires	Higher doses of IVGG (> or =2000 mg/kg per day) administered in a single infusion were more effective for preventing CALs, as evaluated during both the subacute and convalescent phases of KD.
Muta, 2010, (119), Japon	Etude de la QdV au cours de la MK	Etude prospective	250 patients	Auto-questionnaire	Mesure de la QdV	The HRQOL of adolescents and young adults with a history of KD is favorable.
Newburger, 1991, (122), USA	Profil lipidique et MK	Etude rétrospective	105 patients	NA	Profil lipidique	Kawasaki syndrome is associated with important abnormalities in lipid metabolism.
Nomura, 2014, (126), Japon	Œdème et abcès rétro-pharyngés au cours de la MK	Etude rétrospective	39 patients	NA	Caractéristiques cliniques, biologiques et ORL	Careful attention to manifestations and close analyses of CT imaging may allow clinicians to differentiate KD with RPE from RPA.
Ohno, 1982, (131), Japon	Œil et MK	Etude prospective	18 patients	Examen ophtalmologique	Caractéristiques cliniques, biologiques et examen ophtalmologique	There were significant correlations between ocular inflammation and erythrocyte sedimentation rate (P less than .0001) and C-reactive protein level (P less than .0009). No

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Auteur, année, référence, pays	Objectif	Méthodologie, niveau de preuve	Population	Intervention	Critères de jugement	Résultats et signification
						serious ocular complications occurred.
Pal, 2013, (135), Inde	Chromonychie et MK	Série de cas	40 patients	NA	NA	Though chromonychia is noted in many other rheumatic and nonrheumatic diseases, the typical transverse orange-brown chromonychia observed in KD patients can be included as an additional clinical feature in diagnosis of KD.
Peng, 2019, (137), Chine	Arthrite et MK	Etude rétrospective	1420 patients	NA	Caractéristiques cliniques, biologiques et coronaires	The arthritis in KD was self-limited, left no sequelae and did not require additional medications. KD patients with arthritis were more likely to get coronary artery aneurysms than the patients without arthritis
Piram, 2020, (140), France	Facteurs de risque de résistance aux IgIV au cours de la MK chez les patients non asiatiques	Etude prospective	425 patients	Scores japonais	Evolution	We identified predictors of IVIg resistance and built a new score with good sensitivity and acceptable specificity in a non-Asian population.
Printz, 2011, (142), USA	Marqueurs extra-cardiaques de l'atteinte coronaire de la MK	Etude rétrospective	198 patients	NA	Caractéristiques cliniques, biologiques et coronaires	Noncoronary cardiac abnormalities are associated with coronary artery dilation and laboratory evidence of inflammation in the first 5 weeks after KD, suggesting a shared inflammatory mechanism.
Rouault, 2019, (145), France	Atteinte ORL au cours de la MK	Etude rétrospective	142 patients	NA	Présence d'une atteinte ORL	ENT manifestations are frequently at the forefront of KD and constitute a misleading clinical picture responsible for delayed diagnosis and potentially

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						inappropriate medico-surgical management.
Sánchez-Manubens, 2016, (150), Espagne	Score Egami dans une population espagnole	Etude observationnelle	399 patients	Score Egami	Evolution	Although regression models found an area under the ROC curve >0.5 to predict IVIG resistance, the low sensitivity excludes the Egami score as a useful tool to predict IVIG resistance in Catalan population.
Sano, 2007, (151), Japon	Facteurs prédictifs de résistance aux IgIV au cours de la MK	Etude rétrospective	112 patients	NA	Evolution coronaire	By defining predictive values, patients with at least two of three predictors (CRP>or=7.0 mg, TB>or=0.9 mg, or AST>or=200 IU/L) are considered to be non-responsive to IVIG for acute Kawasaki disease.
Saudankar, 2014, (152), Australie	Description de la MK en Australie	Etude observationnelle	353 patients	NA	Epidémiologie et caractéristiques cliniques	KD epidemiology in Western Australia mirrors that of other industrialized, predominantly European-Caucasian populations.
Shiari, 2020, (154), Iran	Atteinte ophtalmologique au cours de la MK	Etude rétrospective	36 patients	NA	Atteinte ophtalmologique	In children with Kawasaki disease, uveitis is associated with coronary artery dilatation, higher neutrophil count, and higher CRP level.
Shike, 2009, (155), Japon	Pyurie au cours de la MK	Etude rétrospective	135 patients et 87 contrôles fébriles	Etude urinaire	Pyurie	the presence of pyuria was neither specific nor sensitive as a marker for KD, but the magnitude of pyuria was significantly higher in KD patients compared with the FC group
Singh, 2018, (157), Inde	Atteinte pulmonaire et MK	Etude rétrospective	602 patients	NA	Atteinte pulmonaire	The diagnosis of KD is often delayed in children who have a predominantly pulmonary presentation.

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Sleeper, 2011, (158), USA-Canada	Performances de 3 scores prédictifs de résistance au ttt au cours de la MK	Etude rétrospective	99 patients	NA	Evolution	Risk-scoring systems from Japan have good specificity but low sensitivity for predicting IVIG resistance in a North American cohort.
Son, 2019, (161), USA	Modèle prédictif d'anévrismes coronaires au cours de la MK	Etude de cohorte	903 patients (cohorte de développement) puis 185 patients (cohorte de validation)	NA	Critères cliniques, biologiques et coronaires	Our risk model for CAA in Kawasaki disease consisting of baseline demographic, laboratory, and echocardiographic variables had excellent predictive utility and should undergo prospective testing.
Sumitomo, 2008, (165), Japon	Arythmie au cours de la MK	Etude prospective	40 patients	Etude électrophysiologique cardiaque	Arythmie	Although there was no relationship between coronary stenosis or obstruction and the EPS parameters, the incidence of abnormal sinus node and atrioventricular node function is apparently higher in KD patients than in the normal population.
Tacke, 2012, (167), Pays Bas	Etude de la QdV au cours de la MK	Etude prospective	280 patients	Auto-questionnaire	Mesure de la QdV	Although at an older age the HRQOL of patients with KD is comparable with the Dutch norm, HRQOL seems to be particularly impaired at younger age. Parents reported more hyperactivity and emotional problems in patients with KD.
Tacke, 2013, (168), Pays Bas	IRM cardiaque au cours de la MK	Etude prospective	60 patients et 20 contrôles	IRM cardiaque	Résultats IRM	we did not observe a difference in cardiac function between KD patients and control subjects, except for a subgroup of patients

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						with ischemic heart disease as a result of severe coronary artery pathology.
Taddio, 2017, (169), Italie	KDSS au cours de la MK	Etude rétrospective	84 patients	NA	Caractéristiques cliniques et paracliniques	KDSS patients are more likely to have higher rates of cardiac involvement. However, most cardiovascular abnormalities resolved promptly with therapy.
Terai, 1997, (171), USA	Prévalence des anévrismes coronaires selon les ttt utilisés au cours de la MK	Etude rétrospective	1629 patients	Aspirine +/- IgIV	Evolution coronaire	We conclude that 2 gm/kg IVGG combined with at least 30 to 50 mg/kg per day aspirin provides maximum protection against development of coronary abnormalities after KD.
Toubiana, 2020, (175), France	PIMS/MISC	Etude prospective	21 patients	NA	Caractéristiques cliniques et paracliniques	The ongoing outbreak of Kawasaki-like multisystem inflammatory syndrome among children and adolescents in the Paris area might be related to SARS-CoV-2. In this study an unusually high proportion of the affected children and adolescents had gastrointestinal symptoms, Kawasaki disease shock syndrome, and were of African ancestry.
Tremoulet, 2008, (176), USA	Résistance aux IVIg au cours de la MK	Etude rétrospective	362 patients	NA	Caractéristiques cliniques et paracliniques	An unexplained increase in IVIG-resistance was noted among patients with KD in San Diego County in 2006. Scoring systems based on demographic and laboratory data were insufficiently accurate to be clinically useful in our ethnically diverse population.

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Tremoulet, 2011, (177), USA	Evolution biologique au cours de la MK	Etude prospective	380 patients	Paramètres biologiques en phase aigüe, subaiguë puis de convalescence	NA	A consistent evolution of laboratory values is associated with KD before and after treatment.
Turnier, 2015, (178), USA	Co-infection respiratoire au cours de la MK	Etude rétrospective	222 patients	NA	Résultats PCR virales	No differences in clinical presentations or outcomes in children with KD stratified according to positive or negative respiratory viral PCR testing were observed.
Wallace, 2000, (183), USA	Echec des IgIV au cours de la MK	Etude rétrospective	65 patients	NA	Evolution et traitements	Nearly 23% of patients with KD may require retreatment and 8% may develop coronary aneurysm. Additional antiinflammatory therapy, such as IV methylprednisolone and IV cyclophosphamide, may be helpful in treating persistent KD.
Wang, 2007, (184), Taiwan	Séquelles rénales de la MK	Etude prospective	50 patients	DMSA renal SPECT	Evolution	This study demonstrated that the potential long-term clinical impact of KD is not limited to coronary artery lesion sequelae but also includes renal scar formation.
Wang, 2015, (185), Chine	SAM et MK	Etude rétrospective	719 patients	Critères de Ravelli	Evolution et traitements	MAS may be a frequently under-recognized complication of KD, because the understanding of complications and diagnostic criteria are still in progress. The HLH 2009 criteria have low sensitivity and specificity for the diagnosis of MAS complicating KD. When

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						hepatosplenomegaly is present in KD patients with abnormal laboratory findings, such as cytopenia, liver dysfunction, hyperferritinemia, elevated serum LDH, hypofibrinogenemia, and hypertriglyceridemia, the presence of MAS should be considered.
Watanabe, 2018, (189), Japon	Insuffisance rénale et MK	Etude rétrospective	39 patients	NA	Caractéristiques cliniques et paracliniques	Although the precise pathogenic mechanism underlying the development of AKI in patients with KD is unknown, several possible mechanisms have been proposed, including T-cell-mediated immunologic abnormalities for TIN, renal and glomerular endothelial injury resulting from vasculitis for HUS, immune complex-mediated kidney injury for immune complex-mediated nephropathy and ASN, and capillary leak and an increased release of cytokines with myocardial dysfunction for KDSS.
Watanabe, 2007, (191), Japon	Pyurie et MK	Etude prospective	23 patients	Etude urinaire	Caractéristiques cliniques et paracliniques	These results suggest that some patients with KD develop sterile pyuria that originates from the urethra and/or the kidney as a result of mild and subclinical renal injury.
Yellen, 2010, (195), USA	Performance des critères AHA 2004 pour le ttt de la MK	Etude rétrospective	195 patients	NA	Caractéristiques cliniques et paracliniques	Application of the 2004 AHA recommendations, compared with the classic criteria alone, improves the rate of IVIG treatment for

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						patients with KD who develop CAAs.
Yi, 2014, (197), Corée	Atteinte hépatobiliaire au cours de la MK	Etude rétrospective	67 patients	NA	Caractéristiques cliniques et paracliniques	For children in the acute phase of KD, USG findings of the GB, especially GB distension, may be an important risk factor for CAA as a complication.
Zheng, 2019, (200), Chine	Méta-analyse : aspirine faible ou forte dose au cours de la MK	Méta-analyse	6 études	aspirine faible ou forte dose	Caractéristiques cliniques et paracliniques et évolution	Low-dose aspirin (3-5 mg·kg ⁻¹ ·d ⁻¹) may be as effective as the use of high-dose aspirin (≥30 mg·kg ⁻¹ ·d ⁻¹) for the initial treatment of KD.
Zheng, 2020, (201), Chine	Méta-analyse : rôle prédictif coronaire du NT-proBNP au cours de la MK	Méta-analyse	8 études	NT-proBNP	Caractéristiques cliniques et paracliniques et évolution	This meta-analysis would be the first one to describe the role of NT-proBNP in detecting CAL of KD.

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