circulatory support, and coronary involvement was ruled out in the catheterization laboratory. She remained haemodynamically unstable and required inotropic support for 39 days, and was therefore unable to be transported to undergo CMR. Ideally, CMR should be performed within 2–3 weeks of the onset of symptoms.[1]

The previous literature describes a substantial neonatal mortality, of up to 38.6%, in addition to persistent of impaired myocardial function in a large proportion of survivors.[2,3] In contrast, we found complete recovery of cardiac function in 100% of patients in a median of 65 days (IQR, 89).

Per our protocol, implemented since 2015, corticosteroids and interferon beta (IFNß) are administered to patients with severe *Enterovirus* myocarditis (need for extracorporeal membrane oxygenation or severe dysfunction without improvement after 2 weeks). Recent research supports the role of IFNß in effective enterovirus clearance, LV function improvement and survival,[6] as viral replication causes direct cardiomyocyte injury in virus-mediated myocarditis.[1] Our most unstable patient received IFNß leading to successful recovery. Furthermore, immunosuppressive therapy has been proposed if myocardial damage is associated with lymphocytic infiltration,[1] so steroids may also be useful.

In conclusion, in this sample of patients with myocarditis confirmed by CMR, we found a severe clinical presentation, and we believe that newborns presenting with cardiogenic shock should be tested for coxsackievirus. In contrast to previous series, outcomes in our sample were favourable, as 100% of patients survived and achieve complete cardiac recovery. The administration of IFNß and steroids could be useful to improve outcomes, although further multicentre studies are needed.

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Morbidity of uveitis associated with juvenile idiopathic arthritis: The silent disease

Morbilidad de la uveítis asociada a artritis idiopática juvenil: la enfermedad silente

Dear Editor:

Juvenile idiopathic arthritis (JIA) is the most frequent chronic rheumatologic disease in the paediatric age group. It encompasses the spectrum of inflammatory arthritis of unknown aetiology, lasting a minimum of 6 weeks, in patients aged less than 16 years. It is a diagnosis by exclusion and is classified into 7 clinical forms based on its clinical and laboratory characteristics and extra-articular manifestations.[1]

Uveitis refers to the inflammation of the iris, ciliary body and choroid, with potential involvement of the retina.[2] Anterior uveitis, or iridocyclitis, is the most frequent extra-articular manifestation of JIA and may cause significant morbidity,[2,3] including development of cataracts, glaucoma, band keratopathy, synechiae, macular oedema, loss of visual acuity (VA) and blindness.[1–3] Juvenile idiopathic arthritis-associated uveitis (JIA-U) is the most frequent form of secondary anterior uveitis in children and occurs in 11%–30% of patients with JIA.[2]

Chronic anterior uveitis (CAU) is the most frequent type of JIA-U. Unlike acute anterior uveitis (AAU), CAU develops silently, without red eye, ocular pain or photophobia. Therefore, ophthalmological evaluations must be performed at regular intervals.[3]

Given the frequency and morbidity of JIA-U and that uveal inflammatory disease is not well known by paediatricians, we conducted a review of the evidence on the

Table 1 Demographic characteristics of patients with juvenile idiopathic arthritis-associated uveitis by type of arthritis.

Type of JIA	n (% of total with uveitis)	Female (%)	Age in years[a] at diagnosis of JIA	Age in years[a] at diagnosis of uveitis	ANA+	HLA-B27+	CAU (%)	AAU (%)
Persistent oligoarticular	8 (42%)	8 (100%)	6 (2.4—8.7)	8.1 (5.5—9.1)	2 (25%)	0	6 (75%)	2 (25%)
Extended oligoarticular	3 (16%)	3 (100%)	1.5 (1.1—3.3)	6.4 (1.8—9.3)	1 (33%)	0	3 (100%)	0
RF-negative polyarticular	2 (10%)	2 (100%)	1.9 (1.8—2.1)	3.4 (2.3—4.5)	1 (50%)	0	2 (100%)	0
Psoriatic arthritis	3 (16%)	2 (67%)	2 (0.8—3.8)	3.8 (2.3—4.5)	1 (33%)	1 (33%)	3 (100%)	0
Enthesitis-related arthritis	3 (16%)	0	1.7 (1.4—3.6)	4 (3.5–6.7)	0	2 (67%)	1 (33%)	2 (67%)
Total	19	15 (79%)	2.3 (1.5—5.8)	5.3 (3.5—8.3)	5 (26%)	3 (16%)	15 (79%)	4 (21%)

AAU, acute anterior uveitis; ANA, antinuclear antibodies; CAU, chronic anterior uveitis; HLA-B27, human leukocyte antigen B27; JIA, juvenile idiopathic arthritis; RF, rheumatoid factor.
[a] Expressed as median (interquartile range).

frequency and complications of uveitis in patients with JIA managed in our hospital.

Out of 196 patients with JIA managed in the paediatric rheumatology unit of the Hospital Universitario 12 de Octubre, 19 (9.7%) developed JIA-U during the follow-up in the unit. Fifteen (79%) were female, and the median age at diagnosis of JIA was 2.3 years (interquartile range [IQR], 1.5—5.8) (Table 1) and the median age at diagnosis of JIA-U, 5.3 years (IQR, 3.5—8.3).

Three patients presented with uveitis before the diagnosis of arthritis, and both diseases were diagnosed at the same time in one patient. In the rest of patients (79%), uveitis was diagnosed after JIA, a median of 2.4 years later (IQR, 0.6–4.1). Juvenile idiopathic arthritis-associated uveitis may develop any time in the course of disease, and the activity of the uveal inflammation does not parallel that of JIA.[3]

The most frequent form of JIA was oligoarticular (Table 1). This is consistent with the findings in other series. The risk factors for development of JIA-U, and CAU in particular, are well established: antinuclear antibody (ANA)-positive status, age less than 6 years and shorter duration of disease (<4 years).[1–4] None of the patients with systemic JIA or rheumatoid factor-positive polyarthritis developed JIA-U.

Acute anterior uveitis is a disease comprehended in the spectrum of HLA-B27 syndromes, so it is more frequent in patients who are male, aged more than 6 years and with enthesitis-related arthritis (ERA). Since it is symptomatic, and not silent like CAU, episodes are diagnosed earlier and associated with a lesser morbidity (Table 2).

The most frequent form of JIA-U was CAU (79%) (Table 2). Fifty-three percent of patients had bilateral involvement, and there was a total of 29 affected eyes. Twenty-four percent of affected eyes experienced a single episode. More than 60% of patients did not respond to topical treatment or experienced recurrence afterward and required subcutaneous methotrexate (12/19), usually combined with biologic agents (14/19), chiefly tumour necrosis factor (TNF) inhibitors (adalimumab and infliximab); in 2 patients, treatment with methotrexate was discontinued due to poor tolerance or adverse events, and they are currently in treatment with intravenous tocilizumab. There were complications in 12 of the 19 patients and 16 of the 29 involved eyes (55%).

The fact that approximately half of the patients with JIA-U developed complications illustrates the relevance of this disease. In this regard, we ought to highlight that despite the JIA-U activity, only 4 out of the 23 patients experienced moderate to severe loss of VA. Although the morbidity associated with JIA-U has improved in recent years with the use of new therapies, there is a significant rate of recurrence after treatment discontinuation.[5]

Given the risk of developing uveitis and the frequency of associated complications, an ophthalmologic evaluation must be performed at diagnosis of JIA,[4,6] with subsequent follow-up evaluations every 3–12 months based on the risk of uveitis.[6]

In short, uveitis is a frequent complication of JIA associated with considerable morbidity. Paediatricians must be aware of the need to refer any child diagnosed with JIA to units with experience in this disease where the patient can receive any needed topical, immunosuppressive or surgical treatment, a process that should be facilitated by hospitals, with close communication between ophthalmology and rheumatology providers.

Table 2 Detected complications, treatments received and status of patients with juvenile idiopathic arthritis-associated uveitis at the end of the study period. The denominator refers to the number of patients or eyes that presented the given complication or underwent the given treatment.

	CAU (n = 15)	AAU (n = 4)	Total (n = 19)
No. of patients with bilateral involvement	8	2	10
No. of involved eyes	23	6	29
No. of eyes with complications	16/23	0/6	16/29
No. of eyes with loss of VA: Mild-normal 0.5—1	19/23	6/6	25/29
No. of eyes with loss of VA: Moderate-severe < 0.5	4/23	0/6	4/29
No. of eyes with band keratopathy	2/23	0/6	2/29
No. of eyes with keratic precipitates	12/23	0/6	12/29
No. of eyes with pigment deposits	10/23	1/6	11/29
No. of eyes with synechiae	11/23	0/6	11/29
No. of eyes with ectopia	2/23	0/6	2/29
No. of eyes with cataracts	7/23	0/6	7/29
No. of eyes with high intraocular pressure	6/23	0/6	6/29
No. of eyes with posterior segment involvement	6/23	0/6	6/29
No. of patients treated with SQ methotrexate	10/15	2/4	12/19
No. of patients treated with biologics	12/15	2/4	14/19
No. of eyes treated with surgery[a]	8/23	0/6	8/29
No. of patients in remission without treatment	4/15	2/4	6/19
No. of patients in remission with treatment	9/15	2/4	11/19

AAU, acute anterior uveitis; CAU, chronic anterior uveitis; JIA, juvenile idiopathic arthritis; No, Number; SQ, subcutaneous; VA, visual acuity (best corrected visual acuity).

[a] Includes cataract surgery (n = 4), non-penetrating sclerectomy (n = 2), laser goniopuncture (n = 1), intravitreal steroid injection (n = 4).

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