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Review Article

Cardiovascular involvement in Sweet's syndrome: A practical review

Margarida Cabral (MD) [1*]
Luís Graça Santos (MD) [1]
Catarina Ruivo (MD) [1]
João Morais (MD, PhD) [1, 2]

1. Department of Cardiology, Leiria Hospital Centre, Leiria, Portugal
2. ciTechCare (Centre for Innovative Care and Health Technology), Polytechnique, Leiria, Portugal

*** Correspondence:**
Margarida Cabral, Department of Cardiology , Leiria Hospital Centre, Rua das Olhalvas, 2410-197 Leiria, Portugal

E-mail:
anamargaridacabral@outlook.pt
Tel: +35 1963444168

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Abstract

Sweet's syndrome, also referred to as acute febrile neutrophilic dermatosis, presents a constellation of clinical features including fever, tender erythematous skin lesions, peripheral neutrophilia, and a predominant dermal infiltrate of neutrophils. This uncommon condition may arise through drug-induced mechanisms, as a secondary condition to malignant diseases, or idiopathically. Importantly, extracutaneous manifestations, including cardiovascular involvement such as arteritis, acute myocarditis, or coronary artery disease, frequently contribute to the intricacy of the clinical presentation. Despite its significance, the literature on Sweet's syndrome with cardiovascular implications remains sparse, leading to ambiguity in clinical management. In this context, we highlight the need for a heightened index of suspicion to establish a diagnosis of Sweet's syndrome with concurrent cardiovascular involvement, alongside considerations for treatment approaches and post-diagnostic monitoring strategies.

Keywords: Sweet syndrome, Arteritis, Myocarditis, Coronary artery disease.

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Sweet's syndrome (SS) is an acute febrile neutrophilic dermatosis, first described in 1964 by Dr. Robert Douglas Sweet (1). Typically, it is defined by the confluence of fever, tender erythematous skin lesions (manifesting as papules, nodules, and plaques), peripheral neutrophilia, and histopathological features primarily comprising mature neutrophils, typically located in the upper dermis (2). SS is an infrequent condition with worldwide distribution, exhibiting itself in one of three primary clinical subtypes: classical (or idiopathic), malignancy-associated, or drug-induced (3, 4). Neutrophilic dermatosis restricted to the dorsal surface of the hands has been proposed as another presentation form, representing nearly 10% of SS cases (5, 6). Further uncommon presentations of this syndrome include neutrophilic dermatosis at the site of lymphedema and necrotising SS, the latter usually associated with human immunodeficiency virus infection or autoimmune diseases (3). As a systemic disease, extracutaneous manifestations may occur, which are particularly frequent in malignancy-associated SS.

Cardiovascular involvement is an exceedingly uncommon phenomenon, albeit one that may intermittently entail life-threatening consequences. Therefore, a high clinical suspicion is needed for prompt diagnosis and treatment, as well as a tight follow-up protocol (3, 6). In this paper, we aimed to review the main features of this syndrome and to provide an overview of documented cases involving cardiovascular complications as reported in the literature. Furthermore, we propose a comprehensive clinical approach model to manage SS patients with suspected cardiovascular involvement.

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Methods

A comprehensive literature review was conducted to include patients diagnosed with Sweet's syndrome identified in PubMed, Embase, and Cochrane databases. Records were identified by searching the terms "Sweet syndrome", "Sweet's syndrome", or "acute febrile neutrophilic dermatosis" associated with terms such as "cardiovascular", "cardiac", "myocarditis", "vasculitis", "arteritis", and "coronary artery disease".

We considered original articles, case reports, and reviews published in English. Duplicate records were initially excluded. The primary aims of the current review were to document the baseline clinical features of patients with presumed or definite Sweet's syndrome and cardiovascular involvement.

The authors' diagnosis of Sweet's syndrome was compared with the current diagnostic criteria presented in table 1. Patients were classified according to the type of Sweet's syndrome and cardiovascular manifestations, as summarised in Table 2. The code of ethics governing this scientific article underscores the principles of honesty, objectivity, transparency, and respect for intellectual property rights, ensuring the integrity and credibility of the research process and its findings.

Table 1. Sweet's syndrome diagnostic criteria

Classical	Drug-associated
Major 1. Abrupt onset of painful erythematous nodules or plaques. 2. Histopathological findings of dense neutrophilic infiltrate without evidence of leukocytoclastic vasculitis.	A. Abrupt onset of painful erythematous nodules or plaques. B. Histopathological findings of dense neutrophilic infiltrate without evidence of leukocytoclastic vasculitis.
Minor 3. Fever > 38ºC. 4. Association with hematologic or visceral malignancy, inflammatory disease, pregnancy OR previous upper respiratory or gastrointestinal infection or vaccination. 5. Excellent response to systemic corticosteroids or potassium iodide. 6. Abnormal laboratory tests at presentation (three of four): a) Erythrocyte sedimentation rate > 20mm/h b) C-reactive protein elevation c) Leukocytes > 8000/yL d) > 70% neutrophils	C. Fever > 38ºC. D. Temporal relation between drug intake and clinical presentation OR temporally-related recurrence after readministration. E. Temporally-related disappearance of lesions after drug withdrawal or treatment with systemic corticosteroids.

To establish the diagnosis of classical Sweet's syndrome, the presence of both major criteria (1 and 2) and two minor criteria is required. The same criteria apply to malignancy-associated Sweet's syndrome, where evidence of malignancy may precede, follow, or appear concurrent with the diagnosis. In drug-associated Sweet's syndrome, all five features should be present for diagnosis. Adapted from Cohen (7).

Background

Pathophysiology: The pathophysiology of SS remains hypothetical since the underlying biological pathways of this neutrophilic dermatosis have yetto be fully elucidated (3). Thus, a multifactorial origin is proposed and many causes – not necessarily mutually exclusive - have been suggested (7, 8). In general, it has been proposed that neutrophilic dermatosis occur due to two main mechanisms: a hereditary activation of the innate immune system; or a somatic activation of myeloid cells as seen in Vacuoles, E1 enzyme, X-linked, auto-inflammatory, somatic (VEXAS) syndrome (9, 10). Circulating autoantibodies, cytokines [such as interleukine (IL) 1, IL-3, IL-6, IL-8, G-CSF and granulocyte-macrophage colony-stimulating factor (GM-CSF)], dermal dendrocytes, human leukocyte antigen serotypes, immune complexes, and leukotactic mechanisms (except complement) may be contributors to the pathogenesis of SS, especially for the malignancy-associated type (3, 6, 8).

Clinical presentation: Classical SS most frequently occurs in middle age women (30 to 50 years) and may be related to infection, usually of the upper respiratory (streptococci, flu-like syndrome) or gastrointestinal tracts (yersiniosis, campylobacteriosis and salmonellosis), autoimmunity (such as inflammatory bowel disease), and pregnancy (3, 6, 7, 11–15). Diagnostic criteria were proposed by Su and Liu (16) Diagnostic criteria were proposed by Su and Liu (16) and reformulated in 1994 by Driesch (17). Fever is the most frequent manifestation and may precede by days or weeks the development of asymmetrically distributed painful

tender erythematous skin lesions (papules, nodules and plaques), usually located in the upper extremities, face and neck (3). Common laboratory test abnormalities include an erythrocyte sedimentation rate greater than 20mm/h, elevated C-reactive protein levels and leucocytosis with neutrophilia (7). Histological findings serve as a cornerstone in identifying SS, with the classical histopathological pattern consisting of a diffuse, dense neutrophilic infiltration in the reticular dermis, often accompanied by papillary dermal oedema. While overt vasculitic changes are usually absent, subtle variations may manifest. Despite the occasional presence of eosinophils and lymphocytes, neutrophils are typically predominant. The epidermis commonly remains unaffected, though instances of spongiosis and subcorneal pustule formation can occur (3, 7, 18, 19). A lymphocytic infiltrate may predominate in the upper parts of the dermis, especially in subcutaneous lesions of SS and neutrophilic dermatosis of the dorsal hands (NDDH) subtype (20, 21).

Malignancy-associated SS, initially conceptualised as a subtype of classical SS (7, 22), was first described in 1971 by Shapiro (23) in a male patient with testicular cancer. It may occur as a paraneoplastic presentation of an established malignancy, as a sign of cancer recurrence, or as the first sign of an undiagnosed neoplasm (7, 8, 24). Approximately 21% of the patients diagnosed with SS eventually have an associated malignant disease, most of these related to hematological disorders (acute myeloid leukaemia, Hodgkin disease, polycythemia vera) and a minority due to solid tumours such as breast, genitourinary and gastrointestinal tract adenocarcinomas (3). The diagnostic criteria are similar to classical SS, except for the association with a neoplasm, which may precede, follow or appear concurrent with the diagnosis (7). The diagnostic criteria of drug-induced SS, as outlined by Walker and Cohen in 1996 (25), underscore the importance of the characteristic temporal relationship between drug administration and symptom development. According to a review published by Villareal-Villareal et al (3), granulocyte-colony stimulating factor (G-CSF) is the most frequently reported drug associated with SS, followed by tretinoin, sulfamethoxazole/trimethoprim, bortezomib and azathioprine. The diagnostic criteria for each subtype of SS are described in table 1.

Cardiovascular involvement in sweet's syndrome

Overview: Considering the systemic responses underlying Sweet's syndrome pathophysiology, extracutaneous manifestations may arise, and involvement of a wide array of organs has been documented (including bones, central nervous system, kidneys, liver, heart, lungs, muscles, and spleen), particularly in cases associated with malignancy, where it can be present in up to 50% of instances (2, 3, 7, 26).

Incidence: Few cases of cardiovascular (CV) involvement have been reported over the last decades (7). In the seventies, an acquired cutis laxa after acute dermatitis was associated with aortitis and fatal myocardial infarction in an 8-year-old girl (27). However, the first two cases of proven SS cardiovascular involvement were only reported a decade later (28, 29). Both cases describe female children with acquired cutis laxa following SS diagnosis, in whom autopsy revealed features compatible with aortitis in both and coronary artery disease in one of them. Since then, another twenty-four cases of CV involvement in SS were reported (table 2). Overall, most patients presenting CV involvement were females (n=16; 61.5%), and the mean age was 38.6±25.5 years. Classical SS (idiopathic) was implicated in 16 (61.5%) patients, malignancy-associated and drug-induced SS were found in six (23.1%) and three (11.5%), respectively. A single report identified the contribution of both malignancy and drug use (3.8%).

In all patients, the diagnosis of Sweet's syndrome was considered, but the presence of both major criteria was not always evident, particularly concerning the onset of skin lesions. In some patients, the diagnosis was established months or years prior to cardiovascular manifestations, leading to compromised analysis of the applied criteria. The most commonly presentation of CV involvement reported in the literature was arteritis, with 13 cases documented, circumscribed to the aorta in eight of them, and usually presenting with one or more aneurysms (28–37). Aortic valve disease, frequently associated with aortitis, was documented in seven cases (28, 29, 32, 34, 35, 38, 39), and mitral valve disease in two patients (38, 40), all presenting with a wide degree of valve regurgitation. Acute heart failure was a common clinical presentation, reported in seven cases (18, 32, 34, 35, 38, 39). Coronary artery disease was documented in four cases (29, 31, 33, 41) and suspected in another two (35, 42). Pericarditis and/or pericardial effusion was present in nine patients (15, 31, 37, 42–47) and myocarditis with or without pericardial involvement was reported in eight cases, four of them histologically proven (15, 34, 39, 43, 48–50). Malignancy was present in four of the cases presenting with myocarditis (43, 48, 50, 51), while classical SS was assumed in the others. All adult patients with idiopathic SS and myocarditis responded well to oral anti-inflammatory treatment (usually oral corticosteroids). Only three patients underwent cardiac magnetic resonance (CMR) evaluation, which revealedoedema in T2-weighted images in all cases, and pericardial or subepicardial late

gadolinium enhancement (LGE) (49–51). The three drug-induced SS reported cases (related to mesalamine, sulfamethoxazole /trimethoprim and quinolone use) were described in women, presenting pericardial involvement, including one case with concomitant myocarditis (45, 46, 49, 50). Only a minority of patients with cardiovascular (CV) involvement underwent biopsy of affected organs. In these cases, the predominant finding was the presence of polymorphonuclear infiltrates. Although infiltration by other inflammatory cells, such as lymphocytes and macrophages, was also reported, along with additional nonspecific findings, as detailed in table 2.

Table 2. Reported cases of cardiovascular involvement in Sweet's syndrome

Case number	Patient's age and genre	Type of Sweet's syndrome	Type of cardiovascular manifestation	Skin biopsy description	Histopathologically proven CV event	Survival upon initial presentation	Year of publication	Reference
1	17 months Female	Unknown (probably idiopathic)	Aortitis (sinus of Valsalva and ascending aorta aneurysms) with severe VR	"spongiosis, edema of papillary dermis, and dense infiltration by PMN leukocytes and some MN cells throughout entire skin thickness"	Yes (intima and medial layers of the aortic aneurysms with "abundant PMN leukocytes freely admixed with MN cells; no giant cells and no evidence of vasculitis")	No	1983	(28)
2	16 months Female	Unknown (probably idiopathic)	Aortitis (ascending and abdominal aorta aneurysm) with VR CAD (occlusion of the RCA and stenosis of the LCA ostia) with mitral VR	No detailed description	Yes ("neutrophilic infiltrate within the aortic wall")	No	1983	(29)
3	68 years Female	Unknown (probably idiopathic)	Pericarditis (also pleural effusion) CAD (not proven)	"diffuse infiltrate of neutrophilic predominance affecting the upper third of the dermis without vasculitis"	No	Yes	1985	(42)
4	39 years Female	Idiopathic	Aortitis/Takayasu arteritis	"edema of dermal papillae and diffuse, moderately dense dermal inflitrate of predominantly PMN leukocytes"	No	Yes	1993	(30)
5	64 years Female	Malignancy associated	Myopericarditis	No detailed description	Yes ("marked fibrinous exudate as well as a perivascular and myocardical infiltration by neutrophils")	No	1998	(43)
6	9 year Male	Unknown (probably idiopathic)	Aortitis/arteritis (sinus of valsalva and ascending aorta aneurysm with extension to BCT, LICA, PT; aortic arch segmental stenosis) CAD (coronary aneurysm) Pericardial effusion	"acute neutrophilic infiltration with an evolution toward chronic inflammatory lesions with scaring"	No	Yes	1999	(31)
7	29 years Female	Idiopathic	AHF Mitral and aortic valvulitis with mild and severe VR, respectively	"diffuse infiltration of neutrophils in the dermis and subcutaneous tissue"	Doubtful findings ("valvulitis with infiltration by lymphocytes and macrophages")	Yes	2001	(38)

Case number	Patient's age and genre	Type of Sweet's syndrome	Type of cardiovascular manifestation	Skin biopsy description	Histopathologically proven CV event	Survival upon initial presentation	Year of publication	Reference
8	44 years Female	Drug associated	Pericardial effusion (and polyserositis)	" dense perivascular and periappendageal infiltrates of neutrophils and edema of the papillary dermis"	No	Yes	2002	(44)
9	46 years Male	Idiopathic	Myocarditis (acute) Aortic valvulitis with severe VR	"diffuse neutrophilic infiltration of the dermis"	Yes (EMB with "interstitial neutrophils")	Yes	2003	(39)
10	10 months Female	Idiopathic	AHF Aortitis (aortic aneurysm) with severe VR / Takayasu arteritis (stenosis of the brachiocephalic branch, common carotid, and left subclavian arteries; decresed caliber of abdominal aorta and iliac artery)	"neutrophilic infiltrate in the dermis"	No	Yes	2005	(32)
11	5 years Male	Idiopathic	Mitral valvulitis (anterior leaflet perfuration) with VR	No detailed description	No	Yes	2007	(40)
12	47 years Female	Unknown (probably idiopathic)	CAD (LCA stenosis) Takayasu arteritis: segmental occlusion of the left common carotid artery, stenosis of the left vertebral and left subclavian arteries, segmental stenosis of the abdominal aorta, splenic, renal and superior mesenteric arteries	No detailed description	No	Yes	2009	(33)
13	42 years Male	Unknown (probably idiopathic)	CAD (ectasia, aneurysm and occlusion of RCA)	No detailed description	No	Yes	2010	(41)
14	2 years Female	Unknown (probably idiopathic)	AHF Myocarditis Aortitis (sinus of Valsalva aneurysm) with severe VR	"neutrophilic dermal infiltration without vasculitis"	Yes (aortic root, aneurysms, and ascending aorta with "focal chronic inflammatory and granulation tissue in the aortic wall, with focal loss of elastic tissue" and myocardium with "multiple areas of acute necrosis")	No	2011	(34)

Case number	Patient's age and genre	Type of Sweet's syndrome	Type of cardiovascular manifestation	Skin biopsy description	Histopathologically proven CV event	Survival upon initial presentation	Year of publication	Reference
15	75 years Male	Unknown (probably idiopathic)	AHF CAD (not proven)	"diffuse infiltrating epidermis predominantly with neutrophils, intraepidermal vesicle formation filed with neutrophils, and marked edema of the papillary dermis"	No	Yes	2012	(36)
16	11 years Male	Idiopathic	Aortitis/Takayasu arteritis (aortic arch and descending aorta aneurysm) with moderate VR	"dense infiltration of neutrophils involving the full thickness of the dermis, without vasculitis or ulceration"	Yes Aorta with "intimal thickening and fibrosis and scarring of the media" and "chronic inflammatory infiltration mainly of lymphocytes."; aortic root with acute inflammation, with (…) neutrophils, elastolysis, and granulomatous changes.	Yes	2012	(35)
17	32 years Female	Idiopathic (pregnancy associated)	Myopericarditis	"dense dermal neutrophilic infiltrate with leukocytoclasis, marked papillary dermal edema, and formation of neutrophilic intraepidermal pustules"	No	Yes	2014	(15)
18	32 years Male	Malignancy associated	AHF (dilated cardiomiopathy)	" infiltration by lymphocytes, eosinophils and neutrophils observed around the blood vessels in the dermis"	No	No	2015	(18)
19	63 years Female	Malignancy associated	AHF (dilated cardiomyopathy) Aortitis (ascending aorta aneurysm) Pericardial effusion	"mild subepidermal edema, a diffuse infiltrate of predominantly mature neutrophils, and nuclear dust. (…) no evidence of vasculitis or epidermal involvement"	No	No	2015	(37)
20	42 years Male	Malignancy associated	Myocarditis (acute) AHF	No detailed description	Yes (EMB with "neutrophil perivascular and interstitial infiltration")	Yes	2016	(48)

Case number	Patient's age and genre	Type of Sweet's syndrome	Type of cardiovascular manifestation	Skin biopsy description	Histopathologically proven CV event	Survival upon initial presentation	Year of publication	Reference
21	40 years Female	Drug associated (mesalamine)	Myopericarditis	"superficial and mid dermal perivascular and interstitial lymphohistiocytic inflammatory infiltrate with neutrophils and leucocytoclasis"	No	Yes	2018	(49)
22	84 years Female	Malignancy and drug associated (sulfamethoxazole/ trimethoprim)	Pericardial (and pleural) effusion	"inflammation in the subcutaneous tissue extending into the reticular dermis with necrosis" (…) and "infiltration of neutrophils	No	Yes	2018	(45)
23	66 years Female	Drug associated (quinolone)	Pericardial effusion	No detailed description	No	Yes	2020	(46)
24	41 years Male	Idiopathic	Myocarditis (acute)	"subepithelial oedema, dermal inflammatory infiltrate with PMN predominance and absence of vasculitis"	No	Yes	2020	(50)
25	45 years Male	Malignancy associated	Myocarditis (acute)	"dense dermal infiltrate of PMN cells"	No	Yes	2021	(51)
26	74 years Female	Malignancy associated	Pericardial (and pleural) effusion	"neutrophilic dermatosis with massive dermal edema"	No	Yes	2021	(47)

AHF - acute heart failure; BT - brachiocephalic trunk; CAD - coronary artery disease; EMB - endomyocardial biopsy; LCA - left coronary artery; LICA - left internal carotid artery; MI - myocardial infarction; MN - mononuclear; PMN - polymorphonuclear; PT - pulmonary trunk; RCA - right coronary artery; VR - valve regurgitation.

Diagnosis and therapeutic approach: A non-exhaustive approach algorithm is proposed in figure 1, adapted from the position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Disease: "Diagnosis and management of myocardial involvement in systemic immune-mediated diseases" (52). The emergence of any new cardiovascular sign or symptom should be considered as a "red flag", warranting suspicion of cardiovascular involvement. Further assessment should encompass laboratory blood testing, including high-sensitivity troponin (hsTn) and N-terminal pro-B type natriuretic peptide (NT-proBNP), alongside an electrocardiogram (ECG) and chest radiography. Elevated levels of hsTn, whether accompanied by ECG changes or not, should evoke consideration for the differential diagnosis of acute myocardial infarction, which typically presents with underlying coronary artery disease, as well as acute myocarditis. Natriuretic peptides, such as NTproBNP, may exhibit elevation in both conditions; however, their role is particularly crucial for ruling out heart failure (52, 53). The emergence of a "new" chest murmur could indicate valvular involvement, which may or may not be accompanied by arteritis. Suspected pericardial involvement should be based on features of chest pain, the

presence of a pericardial rub, and findings from ECG (52, 54). Transthoracic echocardiography (TTE) is a readily available non-invasive imaging technique that holds significant value in the subsequent evaluation of patients with suspected cardiovascular involvement. Left ventricular wall motion abnormalities may be seen in cases of acute myocardial infarction or acute myocarditis; pericardial effusion may support the diagnosis of acute pericarditis.

Additionally, TTE enables the morphological and functional assessment of the heart valves, as well as the measurement of the wall and lumen of the great vessels (50). In cases of acute aortitis, echocardiography can identify circumferential thickening of the aortic wall. Furthermore, TTE allows the assessment of aortic insufficiency and aortic aneurysm. Indeed, conventional angiography remains the gold standard for diagnosing aortitis. However, non-invasive techniques such as computed tomography angiography (CTA) and magnetic resonance angiography (MRA) have supplanted it, offering the additional advantage of visualising the aortic wall and periaortic structures. CTA can depict thickening of the aortic wall and periaortic inflammation, albeit with potentially low sensitivity. MRA has gained diagnostic importance for aortic disease and may reveal vessel wall oedema, enhancement, or wall thickening (55, 56).

For the diagnosis of coronary artery disease, conventional coronary angiography remains the gold standard. However, coronary CTA has emerged as a first-line diagnostic tool for investigating suspected coronary artery disease, especially in patients with a low-to-intermediate pretest probability of the condition (53, 57, 58). According to the ESC expert consensus (59), patients suspected of acute myocarditis should undergo endomyocardial biopsy (Dallas criteria). However, this procedure is invasive, associated with potential complications, and exhibit low sensitivity and low negative predictive value. Consequently, its utilization is infrequent in contemporary clinical practice (60, 61). Alternatively, CMR has emerged as a promising and useful non-invasive imaging technique for the diagnosis and monitoring of acute myocarditis. The diagnosis should be based on the criteria (Lake Louise) outlined by the International Consensus Group on CMR in Myocarditis, which relies on the presence of oedema (T2-weighted) or early (EGE) or late gadolinium enhancement, typically exhibiting a subepicardial pattern (62). Strain assessment through feature tracking imaging, as well as T1 and T2 mapping, and extracellular volume fraction may improve the diagnostic accuracy of CMR for myocarditis and aid in monitoring its evolution (63, 64). As previously noted, concomitant conditions may be present, rendering the algorithm dynamic and necessitating multiple investigations for thorough evaluation. The therapeutic approach to each diagnosed conditions should be guided by the most recent specific guidelines available. In a confirmed or highly suspected cardiovascular involvement in SS patients, a multidisciplinary approach involving a cardiologist is strongly advised. Despite the lack of established treatment guidelines, systemic corticosteroids are recommended as first-line therapy (prednisolone 0.5-1.5mg/Kg/day with subsequent gradual reduction) in most cases, with topical or intralesional corticosteroids reserved for localised lesions (7, 65, 66). After the first dose, improvement of both cutaneous and extracutaneous manifestations usually occurs within 72 hours (3, 67). In case of contraindication to corticosteroids, oral potassium iodide (900mg/day) or colchicine (1.5mg/day) may be used as alternative first-line therapies (3, 4). As second-line systemic therapies, the use of indomethacin (50-150mg/day), clofazimine (100-200mg/day), dapsone (100-200mg/day) or cyclosporine (2-4mg/kg/day) is proposed. Other drugs described as potential treatment options are doxycycline, metronidazole, etretinate, chlorambucil, cyclophosphamide, methotrexate, etanercept, infliximab and thalidomide (3, 7). In refractory cases, interleukin-1 blocking agents such as anakinra have been demonstrated as an effective option (68).

Natural history and prognosis: The natural history and prognosis of SS typically hinge on the underlying cause (subtype), the extent of organ and system involvement, and the resultant consequences. In classical SS, skin lesions can persist for several weeks but typically resolve spontaneously or exhibit prompt response to treatment, often with systemic corticosteroids. Recurrence occurs in approximately one-third of these patients (3, 7) In malignancy-associated cases, resolution of the dermatosis usually accompanies cancer remission, with recurrences or resistance to corticosteroids more commonly observed. Similarly, the withdrawal of the implicated medication often leads to improvement and resolution of drug-induced SS (3, 6, 7).

Conclusions

Sweet's syndrome is defined as a rare acute febrile neutrophilic dermatosis with a global distribution, exhibiting one of three main clinical types: classical, malignancy-associated, or drug-induced. The type of SS influences the natural course, treatment options, and prognosis. While the exact pathophysiology remains speculative, compelling evidence indicates the involvement

of systemic immune and inflammatory responses in its development. Although extracutaneous manifestations are uncommon, their identification is paramount due to the potential for significant associated morbidity and mortality. Clinicians should be alert for cardiovascular red flags in patients with SS suspected or diagnosed, prompting further evaluation when present. In addition to specific treatment of CV conditions and systemic corticosteroid therapy, a multidisciplinary approach to evaluation and follow-up, including involvement of a cardiologist, is recommended.

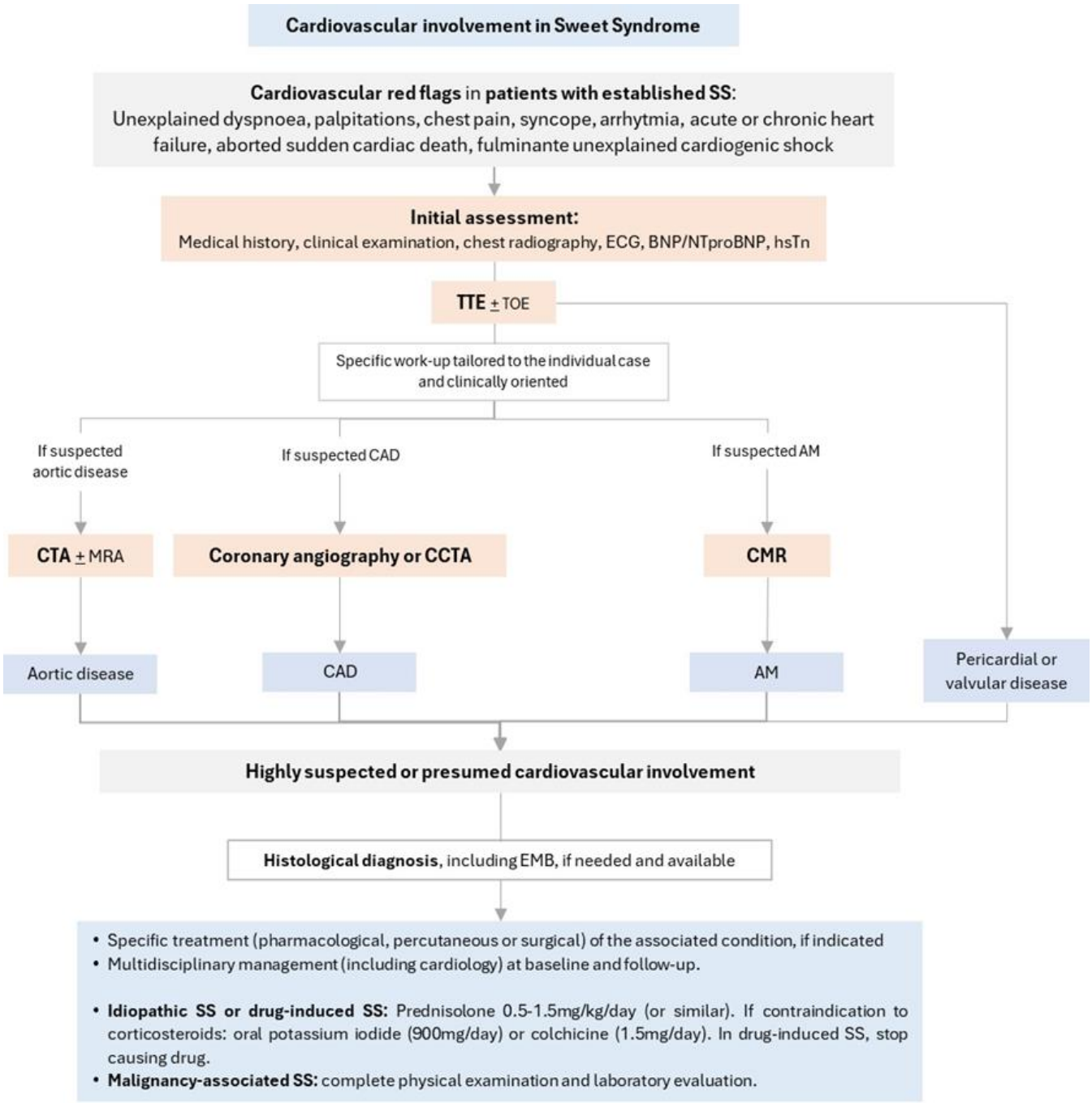

Figure 1. Cardiovascular involvement in Sweet's Syndrome: an approach algorithm.
Adapted from the position statement of the European Society of Cardiology Working Group on Myocardial and Pericardial Disease (52). AM - acute myocarditis, BNP - brain natriuretic peptide CAD - coronary artery disease, CCTA - coronary computed tomography angiography, CMR - cardiac magnetic resonance, CTA - computed tomography angiography, ECG - electrocardiogram, EMB - endomyocardial biopsy, hsTn - high sensibility troponin, MRA - magnetic resonance angiography, NTproBNP - N-terminal brain natriuretic peptide, SS - sweet's syndrome, TOE - transesophageal echocardiography, TTE - transthoracic echocardiography.

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Authors' contribution: MC, LGS: conceptualisation, data collection, manuscript preparation; CR, JM: supervision and validation. All authors reviewed the results and approved the final version of the manuscript.

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