Göteborg, 2026

Cardiac involvement in idiopathic inflammatory myopathies

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademin, Göteborgs universitet kommer att offentligen försvaras i hörsal Arvid Carlsson, Academicum, Medicinaregatan 3, den 21 oktober, klockan 9.00

av **Balsam Hanna**

Fakultetsopponent:

Professor Anders Bengtsson

Lund Universitet, Sverige

Avhandlingen baseras på följande delarbeten

I. **Hanna B**, Polte C L, Sakiniene E, Brömsen J V, Bollano E, Pullerits R, Jin T. Cardiovascular risk and cardiac involvement in idiopathic inflammatory myopathies: insights from a cross-sectional Swedish single-centre study. Scand J Rheumatol 2025; 54 (4): 272-281.

II. **Hanna B**, Polte C L, Sakiniene E, Brömsen J V, Bollano E, Lundberg I E, Pullerits R, Jin T. Cardiac involvement in newly diagnosed patients with idiopathic inflammatory myopathies is associated with skeletal muscle involvement. Clin Exp Rheumatol 2026; 44 (2): 320-329.

III. **Hanna B**, Lundberg I E, Ekwall A-K H, Glinatsi D, Sakiniene E, Hu Z, Pullerits R, Jin T. Elevated sST2 associates with cardiac involvement and declines after treatment in newly diagnosed patients with idiopathic inflammatory myopathies. Arthritis Res Ther 2026; 19;28(1):109.

IV. **Hanna B**, Polte C L, Sakiniene E, Gjertsson I, Brömsen J V, Aziz S, Pullerits R, Jin T. Evolution of cardiac involvement in idiopathic inflammatory myopathies: A 24-month prospective follow-up study. Manuscript submitted.

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GÖTEBORGS UNIVERSITET

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Cardiac involvement in idiopathic inflammatory myopathies

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Avdelningen för reumatologi och inflammationsforskning, Institutionen för medicin Sahlgrenska akademin, Göteborgs universitet, Sverige, 2026.

Abstract

Idiopathic inflammatory myopathies (IIM) are a group of autoimmune systemic rheumatic diseases characterized by skeletal muscle inflammation and extramuscular organ involvement. The heart is one of the organs that can be affected by IIM. Cardiac manifestations, including myocarditis occur often at disease onset and subsequent cardiovascular comorbidities in IIM have been recognized as major contributors to mortality in IIM. However, detecting the cardiac involvement in IIM remains challenging for rheumatologists. Clear guidelines for identifying cardiac involvement are lacking, and routine cardiac screening is not currently part of standard care of IIM.

This thesis aimed to verify the prevalence of myocardial inflammation and cardiovascular comorbidities in IIM. Furthermore, we sought to identify the practical and reliable assessment tools for the early detection the cardiac involvement in IIM. To achieve our goals, we utilized two IIM patient cohorts: a cross-sectional cohort and a prospective cohort.

Our cross-sectional study demonstrated a higher prevalence of traditional cardiovascular risk factors, electrocardiographic and echocardiographic abnormalities among IIM patients along with elevated levels of cardiac biomarkers. Prospective cohort data revealed that, at disease onset, 47% of IIM patients had cardiac structural abnormalities detected by cardiac magnetic resonance (CMR), indicative of cardiac involvement in IIM. Cardiac involvement was closely associated with the severity of skeletal muscle involvement. Furthermore, we identified soluble suppression of tumorigenicity 2 as a potential biomarker for early detection and monitoring of cardiac involvement in IIM. We also found that cardiac inflammation appeared to respond favourably to treatment with corticosteroids and other immunosuppressive therapies. However, myocardial fibrosis was still a frequent finding at 24-month follow-up.

In conclusion, patients with IIM are at increased risk of both traditional cardiovascular comorbidities and myocardial inflammation. A standardized screening protocols incorporating cardiac biomarkers and CMR may facilitate the early detection of the cardiac involvement in IIM. Such an approach could improve risk stratification, guide targeted therapeutic interventions and ultimately enhance clinical outcomes while reducing cardiovascular morbidity and mortality.

Keywords: Idiopathic inflammatory myopathies, cardiovascular diseases, diagnostic tools.

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