Role of immunosuppression in patients with lymphocytic myocarditis and myocardial parvovirus B19 with or without human herpesvirus 6 co-presence

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Background: Parvovirus B19 (B19V) and Human Herpesvirus 6 (HHV6) are commonly detected in endomyocardial biopsy (EMB) specimens of patients with myocarditis symptoms. Whether B19V- and HHV6-DNA belong to the cardiac bio-portfolio remains unclear [1,2]. Until today, the role of B19V-/HHV6-DNA presence in myocarditis is doubtful. Both viruses have been detected in the myocardium, even independent of cardiac inflammation. Yet, their contribution to myocarditis remains controversial. The European Society of Cardiology guidelines exclude the use of immunosuppression in patients with virus-associated myocarditis [3]. Whether myocarditis patients with the presence of B19V-DNA alone or with HHV6-DNA in EMB findings can be treated using immunosuppression, remains a delicate question for clinicians.

Methods: 931 patients with unexplained heart failure symptoms underwent EMB investigation to determine the underlying cause. Patients with low-levels (<1000 copies/μg DNA) of B19V-DNA and HHV6-DNA were identified. A sub-cohort of 28 patients who suffered from chronic-persistent lymphocytic myocarditis with ongoing symptoms was treated with azathioprine 100 mg once daily and prednisolone 1 mg/kg/day tapered down by 10 mg every two weeks followed by a second EMB. Twenty out of 28 patients had B19V-DNA only (mean LVEF=38%, age=47±15) and eight patients had B19V-/HHV6-DNA copresence (mean LVEF=39%, age=42±10). Patients with systemic infections were excluded. Both cohorts received standard heart failure medications. Continuous variables are expressed as means±SD.

Results: B19V-DNA alone and in the presence of HHV6-DNA was detectable in the EMB of 377 and 63 patients, respectively. Following the immunosuppression course, the patients with B19V-DNA only and those with B19V-/HHV6-DNA showed complete resolution of inflammation in 12/20 and 5/8 patients, New York Heart Association (NYHA) functional class improvement in 9/20 and 4/8 patients, LVEF improvement by 8.0±13.8% (p<0.05) and 8.4±9.6% (p<0.05), and a reduction of LVEDD by 3.8±6.1 mm (p<0.05) and 1.0±7.7 mm (p<0.05), respectively. Importantly, following immunosuppression B19V and HHV6-DNA copy numbers went down from 186±266 to 130±186 copies/μg DNA and from 71±141 to 58±143 copies/μg DNA, respectively.

Conclusion: Chronic lymphocytic myocarditis patients with persistent B19V-DNA even in co-presence of HHV6-DNA may benefit from combined immunosuppression therapy. The therapy is clinically effective and safe to reduce cardiac inflammation independent of B19V- and HHV6-DNA copy numbers. In conclusion, we show for the first time that cases with chronic lymphocytic myocarditis can be principally treated with immunosuppression, despite B19V-/HHV6-DNA EMB presence.