Título: BIOMOLECULAR STUDY OF THE PRODUCTS OF *Chlamydophila pneumoniae, Mycoplasma pneumoniae* AND *Borrelia burgerdorferi* IN THE PATHOGENESIS OF MITRAL VALVE MYXOMATOUS DEGENERATION.

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Abstract

Introduction: Mitral valve prolapse (MVP) is the most prevalent mitral valve diseases, with unknown etiology, usually associated with myxoid degeneration (MD). In previous electron microscopy (EM) studies we observed that MD areas presented bacterial co-infections at atheroma plaques (of mycoplasma and chlamydia) and MVP (of rounded or waved bodies compatible with borrelia and mycoplasma).

Purpose: We Analyze whether antigens of pathogens *Chlamydophila pneumonia (Cp), Mycoplasma pneumonia (Mp)* and *Borrelia burgerdorferi* (Bb) have any relationship or are associated with increased inflammatory markers (CD20, CD48, CD68) in the pathogenesis of MD at MVP.

Methods: Observational, analytical, case control study which analyzed 2 groups of 20 patients each and divided in group I: MV tissue with clinical diagnosis of myxomatous; group II (control group): MV without clinical disease from elderly individuals. Immunohistochemical technique was performed for the detection of Bp, Mp antigens, inflammatory mediators and markers of metalloproteinase (MMP9). The presence of *Cp* antigens was done by *in situ* hybridization technique. A survey of bacterial elements was performed by electron microscopy.

Results: The comparison between groups I and II showed an increased number of inflammatory (cells/μm^2) in group I (median of 17.7x4.5, P=0.007 to CD20 and17.3 x 2.7, P=0.008 to CD45). Regarding antigens of infectious agents positive area (μm^2) of Mp and Cp there was a higher in group I (median of 180.992 x 7.669, P=<0.001; 9.903 x 5.864, P=0.2 respectively), for Bb it was higher in group II (median of 7.595x10.583, P=0.15). There was a positive correlation between Bb and percentage of MD (r = 0.52, P = 0.018) at group I. Regarding inflammatory cells, there was a positive correlation between CD45 (T cells) and Mp (r = 0.51, P = 0.02). The presence of MMP9 was positively correlated with the presence of Mp (r = 0.45, P = 0.04). These correlations were absent in the control group. Electron microscopy revealed structures compatible with borrelia, mycoplasma and chlamydia.

Discussion and Conclusions: MD valve fragments showed greater number of inflammatory cells (CD20 and CD45) and bacterial antigens of Mp compared with normal valves as well as the presence of Bb antigens positively correlated with the percentage of MD suggest the participation of infection in the etiology of MD at MVP.

***Key words**: Chlamydophila pneumoniae*, *Borrelia burgerdorferi*, valve myxomatous degeneration, *Mycoplasma pneumoniae*, inflammatory cells

Agência Fomento: FAPESP