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Original article

# Relapsing polychondritis: prevalence of cardiovascular diseases and its risk factors, and general disease features according to gender

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ABSTRACT

The comorbidities in relapsing polychondritis have been scarcely described in the literature. Moreover, apart from a few relapsing polychondritis epidemiological studies, no studies specifically addressing relapsing polychondritis distribution according to gender are available. Therefore, the objectives of the present study were: (a) to analyze the prevalence of cardiovascular diseases and its risk factors in a series of patients with relapsing polychondritis; (b) to determine the influence of gender on relapsing polychondritis. A cross-sectional tertiary single center study evaluating 30 relapsing polychondritis cases from 1990 to 2016 was carried out. To compare comorbidities, 60 healthy individuals matched for age-, gender-, ethnicity- and body mass index were recruited. The mean age of relapsing polychondritis patients was 49.0 ± 12.4 years, the median disease duration 6.0 years, and 70% were women. A higher frequency of arterial hypertension (53.3% *vs.* 23.3%; $p = 0.008$) and diabetes mellitus (16.7% *vs.* 3.3%; $p = 0.039$) was found in the relapsing polychondritis group, compared to the control group. As an additional analysis, patients were compared according to gender distribution (9 men *vs.* 21 women). The clinical disease onset features were comparable in both genders. However, over the follow-up period, male patients had a greater prevalence of hearing loss, vestibular disorder and uveitis events, and also received more cyclophosphamide therapy ($p < 0.05$). There was a high prevalence of arterial hypertension and diabetes mellitus, and the male patients seemed to have worse prognosis than the female patients in the follow up.

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## Policondrite recidivante: prevalência de doenças cardiovasculares e seus fatores de risco e características gerais da doença de acordo com o gênero

*Palavras-chave:*
Doença autoimune
Doenças cardiovasculares
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RESUMO

Há escassez de estudos na literatura sobre as comorbidades na policondrite recidivante. Além disso, exceto por alguns estudos epidemiológicos sobre a policondrite recidivante, não existem trabalhos que analisem especificamente a distribuição da policondrite recidivante de acordo com o gênero. Portanto, os objetivos do presente estudo foram: (a) analisar a prevalência de doenças cardiovasculares e seus fatores de risco em uma série de pacientes com policondrite recidivante; (B) determinar a influência do gênero na policondrite recidivante. Fez-se um estudo transversal unicêntrico que avaliou 30 casos de policondrite recidivante entre 1990 e 2016. Para comparar as comorbidades, foram recrutados 60 indivíduos saudáveis pareados por idade, gênero, etnia e índice de massa corporal. A idade média dos pacientes com policondrite recidivante foi de 49,0 ± 12,4 anos. A duração média da doença foi de 6,0 anos e 70% eram mulheres. Foi observada uma maior frequência de hipertensão arterial (53,3% *vs.* 23,3%, p = 0,008) e *diabetes mellitus* (16,7% *vs.* 3,3%; p = 0,039) no grupo policondrite recidivante em comparação com o grupo controle. Em uma análise adicional, os pacientes foram comparados de acordo com a distribuição de gênero (nove homens *versus* 21 mulheres). As características clínicas iniciais da doença foram comparáveis em ambos os sexos. No entanto, durante o período de seguimento, os pacientes do sexo masculino tiveram maior prevalência de perda auditiva, envolvimento vestibular e eventos de uveíte e também receberam mais tratamento com ciclofosfamida (p < 0,05). Houve uma alta prevalência de hipertensão arterial e *diabetes mellitus* e os pacientes do sexo masculino apresentaram pior prognóstico do que as pacientes do sexo feminino no seguimento.

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## Introduction

Relapsing polychondritis (RP) is a rare systemic autoimmune disease characterized by recurrent inflammation of cartilaginous structures (*i.e.*: ears, nasal bridge, peripheral articulations and tracheobronchial tree) and/or tissues with high proteoglycan concentrations (*i.e.*: eyes, heart, kidneys and blood vessels).[1–3] Systemic manifestations can also involve the eyes, skin, joints, heart valves and blood vessels.[1,2]

RP has an annual incidence around of 3.5 cases per million, and affects all ethnic groups, but a predominate white population.[4,5] The female to male ratio is 0.7–2.9:1[6–13] and disease onset occurs typically in the fourth and fifth decades.[14]

The few RP epidemiological studies conducted to date showed that the most prevalent RP clinical symptoms are auricular chondritis (65–98% of cases) followed by peripheral arthritis (36–81%) and nasal chondritis (29–54%).[6–13] Mortality in RP is more than twice of the general population and the most frequent causes of death are respiratory disease, heart conditions and cancer.[11]

However, the comorbidities in RP have been scarcely described in the literature. Notably, there is currently only one prospective cohort study, reporting the incidence of cardiovascular diseases and their risk factors (coronary heart disease, stroke and diabetes mellitus) in a series of 117 patients with RP.[11] However, the authors did not specifically describe the prevalence of these comorbidities.

Moreover, expect for a few RP epidemiological studies,[6–13] no studies specifically addressing RP distribution according to gender are available. Therefore, the objectives of the present study were: (a) to analyze the prevalence of cardiovascular diseases and its risk factors in a series of patients with RP; (b) to determine the influence of gender on RP.

## Materials and methods

The present study is a single center retrospective cohort that included 30 consecutive patients with RP. To improve the homogeneity of the sample under study, we include only patients followed up at our tertiary service from April 1990 to April 2016.

All patients met at least three of the 6 criteria established by McAdam et al.[6] Patients with age <18 years, overlapping syndrome, cancer or infections were excluded.

The study was approved by the local Ethics Committee.

Demographics data (age at onset of symptoms and diagnosis of RP, gender), clinical manifestations including fever, fatigue, nasal involvement (saddle nose), auricular chondritis, hearing loss, ocular problems (uveitis, episcleritis, scleritis, keratitis or conjunctivitis), vestibular disorder, articular (arthralgia or arthritis), neurological disorder (mainly optic neuropathy, headache, seizures, hemiplegia, organic brain syndrome, aseptic meningitis, meningoencephalitis or cerebral aneurysms), costochondritis, subglottic stenosis, laryngotracheitis, cardiac disorder (mitral or aortic valve diseases), renal involvement (glomerulonephritis), body mass index, weight, disease duration, and laboratory data were obtained from a systematic review of the medical records.

The clinical and laboratory manifestations considered were those presenting at disease onset and during follow-up

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