

## Seasonal influence on incidence of polymyalgia rheumatica: winter might be coming

Sirs,

Polymyalgia rheumatica (PMR) is a common inflammatory rheumatic disease of elderly patients. Symptoms typically consist of pain and stiffness affecting the neck, shoulder- and hip girdles, and elevated acute phase reactants (1). To date, the exact aetiology of PMR is thought to be multifactorial, with genetic background, immune senescence and environmental factors, such as infections, among the most important contributors to disease onset (1). Interestingly, a seasonal pattern of disease onset has been previously indicated in giant cell arteritis (GCA), a condition often associated with PMR (1). Given the close relation between these two conditions, 40–60% of GCA patients also have PMR at the time GCA is diagnosed and 16–21% of PMR patients have or will develop GCA, one may hypothesise that a similar seasonal pattern could also occur in PMR (1). Various infectious diseases are thought to contribute to the seasonal pattern described in GCA, including *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, *Parvovirus B19* and *parainfluenza virus type 1* (2–4). These micro-organisms also have been hypothesised to trigger PMR, as simultaneous peaks between the onset of PMR and epidemics of these infectious agents were described (2). Consistent with the seasonal pattern hypothesis, 16% of PMR patients reported a respiratory tract infection or seasonal influenza before the onset of symptoms (5). In contrast, others reported no associations with presence of *parvovirus B19*, *C. pneumoniae*, *respiratory syncytial virus*, *measles virus*, *herpesviruses type 1 and 2*, *Epstein-Barr virus* or *human herpesvirus* (2, 4–6).

A cyclic pattern of disease onset following seasonal distribution may support the theory of infectious agents as disease trigger in PMR (2, 7–10). We therefore aimed to investigate the occurrence of a seasonal effect in incidence of onset of PMR. We examined data from 454 newly diagnosed PMR patients (clinical diagnosis) who visited our outpatient clinic between April 2008 and September 2017. Patients with other active concomitant inflammatory rheumatic disease at baseline were excluded. Six patients were not included because the date of PMR symptom onset

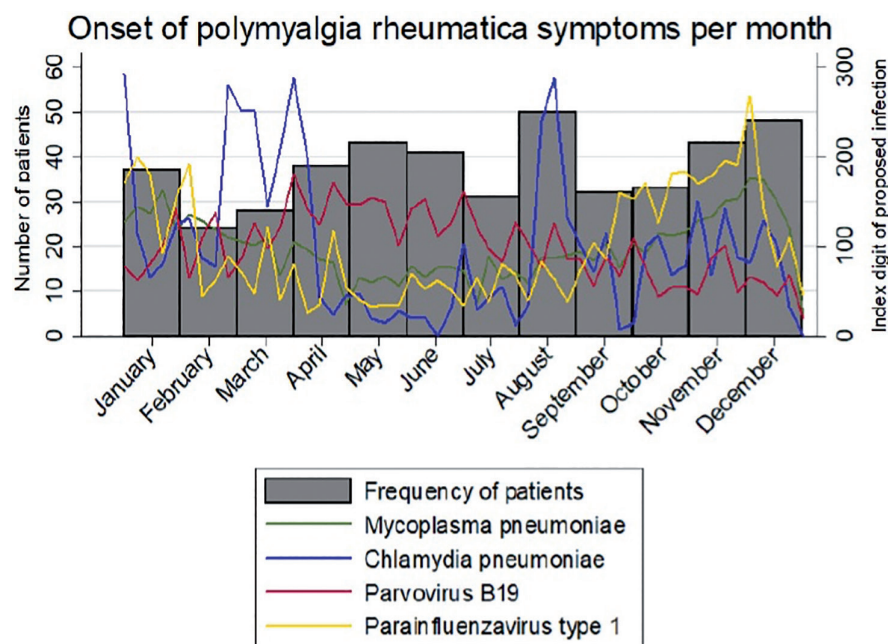


Fig. 1. Onset of polymyalgia rheumatica symptoms per month.

was missing, and therefore a total of 448 patients were finally analysed. Of these patients, 247 (55%) were women and mean age was  $66 \pm \text{SD } 9$  years. Patients symptoms started 10 weeks (interquartile range (IQR) 6 to 16 weeks) prior to PMR diagnosis. Patients were further grouped based on the month their symptoms debuted, not on the moment of diagnosis. The *chi-square goodness of fit test* to determine whether PMR onset was distributed equally throughout the year did not reach statistical significance:  $p=0.06$ . Additionally, we obtained data on incidence of the infectious agents from the Dutch National Institute for Public Health and Environment (RIVM), in which an association was previously described with GCA/PMR. From this data, the index digits was calculated where 100 marks the weighted average of infections at that time point for the years 2007 to 2017. As shown in figure 1, the incidence of PMR symptoms onset is higher in November-January and April through June, with a peak in August. However, these peaks are not compatible with peaks of the proposed infectious agents. In addition, no coincidence of peaks between onset of PMR symptoms and the proposed agents were seen when we analysed each year separately (data not shown). We conclude that this bimodal seasonal pattern of PMR onset is insufficiently suggestive for an infectious trigger as cause of PMR. Limitations of this study are the retrospective character resulting in absence of blood samples to test whether patients

had experienced a recent infection of the proposed infectious agents.

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D.E. MARSMAN<sup>1</sup>, MD  
N. DEN BROEDER<sup>1</sup>, MSC  
C.D. POPA<sup>1,2</sup>, MD, PhD  
A.A. DEN BROEDER<sup>1,2</sup>, MD, PhD  
A. VAN DER MAAS<sup>1</sup>, MD, PhD

<sup>1</sup>Department of Rheumatology,  
Sint Maartenskliniek, Nijmegen,  
the Netherlands;

<sup>2</sup>Department of Rheumatology,  
Radboudumc, Nijmegen, the Netherlands

Please address correspondence to:

D.E. Marsman,  
Sint Maartenskliniek,  
Department of Rheumatology  
PO Box 9011, 6500 GM Nijmegen,  
The Netherlands

E-mail: d.marsman@maartenskliniek.nl

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### References

- GONZÁLEZ-GAY MA, MATTESON EL, CASTAÑEDA S: Polymyalgia rheumatica. *Lancet* 2017; 390: 1700-12.
- GONZÁLEZ-GAY MA, VAZQUEZ-RODRIGUEZ TR, LOPEZ-DÍAZ MJ *et al.*: Epidemiology of giant cell arteritis and polymyalgia rheumatica.

## Letters to Editor Rheumatology

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- Arthritis Rheum* 2009; 61: 1454-61.
3. PERIS P: Polymyalgia rheumatica is not seasonal in pattern and is unrelated to parvovirus B19 infection. *J Rheumatol* 2003; 30: 2624-6.
  4. DUHAUT P, PINEDE L, BORNET H *et al.*: Giant Cell arteritis and Polymyalgia rheumatica a viral hypothesis: A multicenter prospective case study. *J Rheumatol* 1999; 2: 361-9.
  5. FALSETTI P, CONTICINI E, ACCIAI C *et al.*: Polymyalgia rheumatica following infective triggers or vaccinations: a different subset of disease? *Reumatologia* 2020; 58: 76-80.
  6. NARVÁEZ J, CLAVAGUERA MT, NOLLA-SOLÉ JM, VALVERDE-GARCIA J, ROIG-ESCOFET D: Lack of association between infection and onset of polymyalgia rheumatica. *J Rheumatol* 2000; 27: 953-7.
  7. SALVARANI C, GABRIEL SE, O'FALLON WM, HUNDER GG: The incidence of giant cell arteritis in Olmsted County, Minnesota: apparent fluctuations in a cyclic pattern. *Ann Intern Med* 1995; 123: 192-4.
  8. BAS-LANDO M, BREUER GS, BERKUN Y, MATES M, SONNENBLICK M, NESHER G: The incidence of giant cell arteritis in Jerusalem over a 25-year period: annual and seasonal fluctuations. *Clin Exp Rheumatol* 2007; 25 (Suppl. 44): S15-7.
  9. GONZALEZ-GAY MA, MIRANDA-FILLOY JA, LOPEZ-DIAZ MJ *et al.*: Giant cell arteritis in northwestern Spain: a 25-year epidemiologic study. *Medicine* (Baltimore) 2007; 86: 61-8.
  10. PETURSDOTTIR V, JOHANSSON H, NORDBORG E, NORDBORG C: The epidemiology of biopsy-positive giant cell arteritis: special reference to cyclic fluctuations. *Rheumatology* (Oxford) 1999; 38: 1208-12.