Seasonality in ANCA-associated vasculitis

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Background: pathogenesis of ANCA-associated vasculitis (AAV) is multifactorial and most likely involves the interaction of environmental and genetic factors. Environmental seasonal exposures may play a role in contributing to the risk of the disease and relapses. Our objective was to investigate whether there is a seasonal pattern in the beginning of symptoms and relapses of ANCA vasculitis.

Methods: we reviewed medical records of patients between 2000-2014 with the problem: vasculitis, Granulomatosis with polyangiitis (GPA) or Wegener, Eosinophilic granulomatosis with polyangiitis (EGPA) or Churg Strauss, Microscopic polyangiitis (MPA), and medical records of patients with positive ANCA, myeloperoxidase (MPO) or proteinase 3 antibodies (PR3) in laboratory database. Patients with diagnosis of ANCA vasculitis (Chapel Hill 2012) were included. Dates of beginning of symptoms (symptoms included in the Birmingham vasculitis activity score attributed to the disease) and dates of relapses (recurrence of symptoms or new symptom attributed to vasculitis) were identified.

Results: one hundred patients with AAV were included (females 70%, CI 60.9-79.1; mean age at diagnosis 58.4, SD 18.8, GPA=38, MPA=19 EGPA=15, renal limited ANCA vasculitis, RLV, =28). Patients were grouped in those with symptoms of disease beginning in autumn-winter (n=47) and in spring-summer (n=47) and compared (table 1). Dates of initial symptoms could not be established in 6 patients. No seasonal pattern was observed in the beginning of diseases. Clinical manifestations were similar in different seasons except for sinusal involvement that was more frequent in those starting symptoms in autumn-winter. A total of 26 patients (26%, GPA= 11, EGPA=7, MPA=4 and RLV=4) had relapses of AAV during follow-up, with a total of 30 relapses. Relapses were more frequent in autumn-winter (n=21) than in spring-summer (n=9) (p=0.004) for all patients, and in particular in GPA (p=0.03) and EGPA (p=0.03) (table 2).

Conclusion: no seasonal pattern was observed in the beginning of AAV. Relapses were more frequent in autumn-winter in GPA and EGPA, suggesting that environmental seasonal exposures may trigger them.

Table 1. ANCA vasculitis patients grouped by season of beginning of symptoms

	Beginning of symptoms in autumn-winter (n=47)	Beginning of symptoms in spring-summer (n=47)	P
Females, % (CI95)	74.5 (61.7-87.2)	63.8 (49.8-77.9)	0.264
Age at diagnosis, media (SD)	58.9 (SD 19.2)	59.1 (18.2)	0.98
Follow up, years, median (IQR)	6.9 (2.5-9.7)	6 (1.7-9.4)	
GPA, n (%)	18 (38.3)	16 (34)	0.67
EGPA, n (%)	8 (17)	6 (12.7)	0.44
MPA, n (%)	8 (17)	11 (23.4)	0.56
LRV, n (%)	13 (27.7)	14 (29.8)	0.82
ANCA C positive, % (CI)	34.8 (20.7-48.9)	34.1 (19.7-48.5)	0.94
ANCA P positive, % (CI)	47.9 (35.2-62.8)	52.1 9 (0.7-70.4)	0.6
Initial clinical manifestations, % (CI)			
- Renal	66 (52-79.8)	68.1 (54.4-81.7)	0.83
- Pulmonar infiltrates	27.7 (14.6-40.8)	27.7 (14.6-40.8)	1
- Alveolar Hemorrhage	10.6 (1.6-19.7)	8.5 (0.3-16.7)	0.73
- Fever	21.3 (9.3-33.3)	23.4 (11-35.8)	0.8
- Constitutional	31.9 (18.3-45.6)	36.2 (22.1-50.2)	0.66
- Ocular	4,3 (1.7-10.2)	4,3 (1.7-10.2)	1
- Sinusal	40.4 (26.1-54.8)	21.3 (9.3-33.3)	**0.04**
- Hearing loss	10.6 (1.6-19.7)	14.9 (4.5-25.3)	0.54
- Neuropathy	12.8 (3-22.5)	14.9 (4.5-25.3)	0.77
- Cutaneous	8.5 (0.3-16.7)	14.9 (4.5-25.3)	0.34
Relapses during follow up, % (CI)	31.9 (18.3-45.6)	21.3 (9.3-33.3)	0.243

Table 2. Relapses of ANCA vasculitis grouped by season

	Relapses in autumm-winter (n=21)	Relapses in spring-summer (n=9)	P
Total of ANCA vasculitis relapses, n	21	9	**0.004**
GPA, n	11	4	**0.03**
EGPA, n	6	1	**0.03**
MPA, n	3	1	0.5
LRV, n	1	3	0.5