Epidemiology of ANCA-associated Vasculitis

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- Epidemiology • Vasculitis • Wegener's granulomatosis
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The antineutrophil cytoplasm antibody (ANCA)-associated vasculitides (AAV) comprise Wegener's granulomatosis (WG), microscopic polyangiitis (MPA), and Churg-Strauss syndrome (CSS). For historical reasons polyarteritis nodosa (PAN) is often considered with the AAV although the presence of ANCA is now not considered to be a feature of PAN.

The epidemiology of the AAV poses considerable challenges to epidemiologists. The first is the difficulty of defining a case with a lack of clear distinction between the different disorders. There are 2 main systems of case definition or classification in current use: the American College of Rheumatology (ACR) (1990) classification criteria[1] and the Chapel Hill Consensus Definitions (CHCC).[2] There are several problems with these when used for epidemiology purposes. MPA does not feature in the ACR system but does in the CHCC and neither system use ANCA as a criterion. The CHCC were intended as definitions only and not classification criteria. Hence there are no validated classification criteria for MPA. To overcome this many studies have used both in parallel, but this leads to considerable overlap between categories.[3] To improve the situation, an algorithm was devised by international consensus to incorporate both systems and this has been validated in 2 separate populations and shown to reliably classify patients with AAV into WG, MPA, CSS, and PAN with a minimum of unclassified patients.[4,5]

The second difficulty is case capture. The AAV are rare and therefore a large population is required to determine the incidence and prevalence, and this poses questions of feasibility. A large population increases the risk of incomplete case

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detection but permits a reasonable number of cases to be collected in a practicable time frame; whereas a smaller population requires a much longer time frame to collect the necessary cases, which also may not be feasible. Statistical methods of capture-recapture analysis enable estimates to be made of the number of missing cases.

The third difficulty is case ascertainment. The AAV are rare potentially life-threatening conditions and therefore usually come to the attention of physicians. Ascertainment of cases can therefore be achieved by monitoring clinical facilities and hospital activity statistics. The AAV are multisystem and therefore surveillance of many different specialties is necessary. However, patients with fulminating disease may die before diagnosis and not be ascertained.

The rarity of the conditions makes prospective case-control studies difficult to conduct because the population size required to achieve statistical confidence is in excess of that readily available. Thus, much of the data on risk factors are derived from retrospective studies with inherent potential bias.

Despite these difficulties, a considerable body of data on the epidemiology of the AAV has been built in the past 20 years. However, much of the data comes from White populations of European descent. There are relatively few studies from non-White populations and none from Africa or the Indian Subcontinent.

AAV

There is a broad consensus that for primary, systemic, medium- and small-vessel vasculitis (including WG, CSS, PAN, and MPA) the overall annual incidence is approximately 10 to 20/million and the peak age of onset is 65 to 74 years (**Table 1**).[8,10,11]

WG

In 1936, Wegener first described a disease characterized by necrotizing granulomata of the upper and lower respiratory tract, focal glomerulonephritis, and necrotizing systemic vasculitis.[12] The annual incidence of WG in the past decade has been estimated to be 8 to 10/million. WG is slightly more common in men than women.

Age

WG is generally considered to be rare in childhood with an incidence of 0.3/million.[13] However, a recent Canadian study in the Southern Alberta childhood population reported that the average incidence of childhood WG during 1993 to 2008 was 2.75/million/y, which is comparable with the incidence observed in adults. This was driven primarily by a high incidence in the last 5 years of the study of 6.39/million/y.

Table 1
Incidence of AAV

Place	Period	Incidence (Per Million)	References
Australian Capital Territory, Australia	1995–1999	17.0	6
	2000–2004	16.2	6
Lugo, Spain	1988–1994	13.0	7
Norwich, UK	1988–2008	20.1	8
Crete, Greece[a]	1995–2003	19.5	9
Sweden	1997–2006	21.8	10

[a] Primary systemic vasculitides including Henoch-Schönlein purpura.