Journal of Drug Discovery and Therapeutics 1 (1) 2013, 89-91

RESEARCH ARTICLE

Clinical Profile and Outcomes of Patients with Anti-Neutrophil Cytoplasmic Antibody (ANCA)-Associated Vasculitis in a Tertiary Care Hospital

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ABSTRACT

Background: Anti-Neutrophil Cytoplasmic Antibody (ANCA)-associated vasculitis is a rare and complex autoimmune disease involving inflammation of small and medium-sized blood vessels, leading to multi-organ dysfunction. The disease predominantly affects the kidneys and lungs, causing progressive organ damage if not managed promptly. This study aims to analyze the clinical presentation, laboratory findings, and the extent of organ involvement in patients diagnosed with ANCA-associated vasculitis.

Objective: To study the clinical profile of patients with ANCA-associated vasculitis, focusing on organ involvement, symptom severity, and laboratory findings.

Material and Methods: This prospective study involved 60 patients diagnosed with ANCA-associated vasculitis in the Department of Medicine at a tertiary care hospital. Patients were evaluated through detailed clinical examinations, laboratory testing, and imaging techniques to determine organ involvement and disease severity. Positive ANCA serology confirmed the diagnosis.

Results: Among the 60 patients, 65% exhibited renal involvement, with elevated serum creatinine levels indicating impaired kidney function. Pulmonary manifestations such as cough and hemoptysis were present in 52% of cases. Skin involvement, characterized by rashes and purpura, was noted in 28% of patients. Laboratory results showed that all patients had positive ANCA titers, with elevated inflammatory markers.

Conclusion: The study highlights the multi-system involvement in ANCA-associated vasculitis, with renal and pulmonary involvement being the most common. Prompt diagnosis and tailored treatment are essential to manage the disease and improve clinical outcomes.

Keywords: ANCA-associated vasculitis, autoimmune disease, renal dysfunction, pulmonary symptoms, systemic inflammation

INTRODUCTION:

Anti-Neutrophil Cytoplasmic Antibody (ANCA)-associated vasculitis is a heterogeneous group of autoimmune diseases characterized by the inflammation of small-to-medium-sized vessels, resulting in multi-organ dysfunction (1). The disease encompasses three primary types: granulomatosis with polyangiitis (GPA), microscopic polyangiitis (MPA), and eosinophilic granulomatosis with polyangiitis (EGPA) (2). These conditions involve the production of ANCA antibodies, primarily targeting proteinase-3 (PR3) and myeloperoxidase (MPO) antigens within neutrophils, leading to vascular inflammation and damage (3).

The pathophysiology of ANCA-associated vasculitis involves a combination of genetic predisposition and environmental triggers. The activation of neutrophils by ANCA antibodies results in endothelial damage, leading to a cascade of immune responses that culminate in inflammation and tissue injury (4). The clinical spectrum is broad, with some patients presenting with life-threatening symptoms such as alveolar hemorrhage and rapidly progressive glomerulonephritis, while others exhibit milder manifestations such as cutaneous vasculitis or sinus involvement (5).

Renal and pulmonary involvement are the most common and critical manifestations of ANCA-associated vasculitis. Renal involvement, typically presenting as rapidly progressive glomerulonephritis, is seen in the majority of patients, often leading to end-stage renal disease if not promptly treated (6). Pulmonary symptoms include cough, dyspnea, and

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hemoptysis, with diffuse alveolar hemorrhage being a potentially fatal complication (7).

This study aims to provide insights into the clinical presentation, organ involvement, and laboratory findings of patients diagnosed with ANCA-associated vasculitis, contributing to better diagnosis and management of this condition.

Aim and Objectives

Aim:

To evaluate the clinical profile of patients with ANCA-associated vasculitis, with a focus on organ involvement and laboratory findings.

Objectives:

1. To analyze the frequency of renal, pulmonary, and systemic involvement in ANCA-associated vasculitis.
2. To assess laboratory parameters, including ANCA serology, inflammatory markers, and renal function.

Material and Methods

This study was conducted in the Department of Medicine at a tertiary care hospital. Sixty patients diagnosed with ANCA-associated vasculitis were enrolled. All patients provided informed consent, and the study protocol adhered to ethical guidelines.

Inclusion Criteria:

- Adults aged 18 years and above diagnosed with ANCA-associated vasculitis.
- Positive ANCA serology, including PR3 and MPO antibodies.

Exclusion Criteria:

- Patients with other autoimmune diseases or infectious vasculitis.
- Those unwilling to provide consent.

Study Design:

Each patient underwent a thorough clinical evaluation focusing on symptoms such as hematuria, hemoptysis, skin lesions, and systemic features like fever and weight loss. Laboratory investigations included complete blood counts, renal function tests, inflammatory markers (CRP and ESR), and ANCA testing. Imaging studies, including chest X-rays and CT scans, were performed to evaluate pulmonary involvement. Kidney biopsies were conducted when indicated to confirm glomerulonephritis.

Results

Table 1: Clinical Features and Organ Involvement in ANCA-Associated Vasculitis (n=60)

Clinical Feature	Frequency	Percentage (%)
Renal Involvement	39	65%
Pulmonary Symptoms	31	52%
Skin Lesions	17	28%
Systemic Symptoms (Fever, Weight Loss)	26	43%
Positive PR3-ANCA	34	57%
Positive MPO-ANCA	26	43%

Renal involvement was the most common manifestation, observed in 65% of patients, indicating the high prevalence of kidney dysfunction in ANCA-associated vasculitis. Pulmonary symptoms, including cough and hemoptysis, were present in over half of the patients. Skin involvement, seen in 28% of the cases, included rashes and purpura. Systemic symptoms such as fever and weight loss were noted in 43% of patients, reflecting the systemic nature of the disease.

Table 2: Laboratory Findings in Patients with ANCA-Associated Vasculitis (n=60)

Parameter	Mean Value ± SD	Reference Range
Serum Creatinine (mg/dL)	2.8 ± 1.1	0.6–1.2
C-Reactive Protein (mg/L)	45.6 ± 12.4	<10
ESR (mm/hr)	62 ± 15	<20
Hemoglobin (g/dL)	9.5 ± 2.1	13.5–17.5 (M) / 12–15.5 (F)
ANCA Positivity (%)	100	-

The laboratory results highlight elevated serum creatinine levels in patients with renal involvement, indicating impaired kidney function. Inflammatory markers, including CRP and ESR, were significantly elevated, consistent with systemic inflammation. Hemoglobin levels were below normal in many patients, reflecting the presence of anemia. All patients had positive ANCA serology, confirming the diagnosis of ANCA-associated vasculitis.

Discussion

ANCA-associated vasculitis presents a wide range of clinical manifestations, with renal and pulmonary involvement being predominant (8). The findings of this study align with previous research, emphasizing the importance of early diagnosis and comprehensive management to prevent severe complications (9).

The elevated inflammatory markers and anemia observed in this cohort are consistent with other studies, suggesting that systemic inflammation contributes to the disease burden (10). The high prevalence of renal involvement highlights the need for early detection and prompt treatment to prevent chronic kidney disease (11). Pulmonary symptoms, including hemoptysis and alveolar hemorrhage, require close monitoring due to their life-threatening potential (12).

Immunosuppressive therapy, including corticosteroids and cyclophosphamide, remains the cornerstone of treatment. Early initiation of therapy is crucial to improving patient outcomes and reducing mortality (13).

Conclusion

This study provides valuable insights into the clinical profile of ANCA-associated vasculitis, emphasizing the importance of early diagnosis and prompt treatment. Renal and pulmonary involvement are the most common manifestations, necessitating careful monitoring and management.

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