Churg-Strauss syndrome

Churg-Strauss syndrome, more recently called '**allergic granulomatosis angiitis** or **eosinophilic granulomatosis with polyangiitis (EGPA)**, is a rare multisystem autoimmune disease. It is phased, starting with bronchial asthma and allergic symptoms, continuing with rising eosinophilia in the blood and tissues and culminating in Systemic vasculitis. The syndrome was first described in 1951 by Swedes Jakob Churg and Lotte Strauss, who characterized it as a granulomatosis variant of polyarteritis nodosa (so-called necrotizing vasculitis with extravascular necrotizing granulomas of various stages) with pronounced eosinophilic infiltrates in the wall of both vascular and perivascular vessels.[1] Histologically, the syndrome is now characterized as **necrotizing vasculitis of small and medium blood vessels with Granulomatous Inflammation and tissue infiltration of eosinophilia**. It is a serious disease that fundamentally affects patients' quality of life and can also end in death. Early diagnosis and therapy greatly improve patients' survival and reduce the risk of developing chronic organ damage.[1]

Epidemiology

The incidence of Churg-Strauss syndrome is reported as **2,4/1 000 000**. The disease manifests between the ages of 14 and 75, the most common occurrence being in the 4th and 5th decade. Men are slightly more likely to be affected by CSS.[1]

Clinical picture

The clinical picture can be divided into **three phases**:

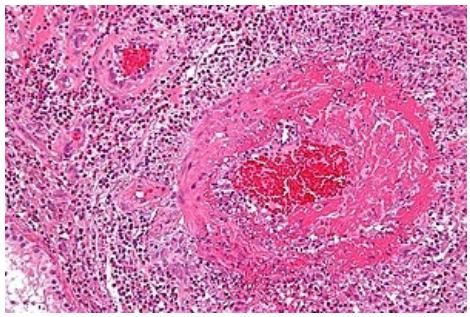
1. Prodromal stage with asthma and/or allergic rhinitis with nasal polyposis (3-8 years); repeated sinusitis, nasal polyps, bleeding, purulent nasal discharge and mesotitis
2. Eosinophilia in blood and tissues, eosinophilic pneumonitis with transient infiltrates (RTGs, periphery, multiple, nodal, nodule-free, effusion with large amounts of eosinophils), eosinopilic gastroenteritis (abdominal pain dyspepsia, diarrhea), eosinophilic peritonitis, pancreatitis, cholecystitis, alveolar hemorrhage and more.
3. Systemic vasculitis.

CSS may be accompanied by other symptoms such as weight loss, temperatures, night sweats, arthralgia, mono- and polyarthritis, myalgia, myositis, head nerve paresis, mononeuritis multiplex, intracranial haemorrhage, convulsions, psychotic conditions, erythema, skin necrosis. The most common cause of death is **heart failure** (eosinophilic endo/myo/pericarditis, coronary artery vasculitis, valve damage). Non-specific renal parenchyma damage is uncommon but may present as glomerulonephritis with proteinuria and/or hematuria with hypertension.

Diagnostic criteria of Churg-Strauss vasculitis

To confirm CSS diagnosis, a patient must meet **at least four of the ACR** (American College of Rheumatology)[2]:

- Bronchial Asthma
- Eosinophilia - more than 10% of the differential budget.
- Mono- or polyneuropathy
- Volatile pulmonary infiltrates.
- Disability of the paranasal sinuses.
- Finding eosinophils extravascularly



microscopic picture of CSS

Laboratory findings in CSS patients

- Non-specific-high sedimentation , increased CRP, anemia, positive rheumatoid factor, high IgE level.
- Eosinophilia.
- ANCA antibodies in 30-40% of cases[3].

ANCA antibodies

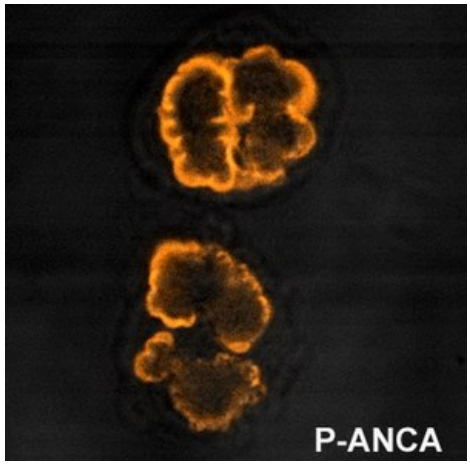
The presence of **ANCA** (AntiNeutrophil Cytoplasmatic Antibodies) antibodies is crucial for the development of vasculitis. These are autoantibodies against **cytoplasmic antigens Neutrophilic granulocytes**, that stimulate neutrophils to produce oxygen radicals and secrete lysosomal enzymes, causing their destruction. The exact role of the ANCA in vasculitis pathogenesis is still not entirely clear, but they appear to contribute to the production of free oxygen radicals by neutrophils and facilitate leukocyte adhesion to the vascular endothelium. At the same time, they activate monocytes and increase the production of certain cytokines(TNF-α) and chemokines. ANCA antibodies can be determined by:

- immunofluorescence (we recognize **3 subtypes**),
- c-ANCA (cytoplasmic),

- p-ANCA (perinuclear) – typical for CSS,
- a-ANCA (atypical),
- ELISA method (can be distinguished by 7 ANCA specifiers)
- anti-myeloperoxidase MPO (typical of CSS),
- against proteinase 3 PR3,
- against lactoferin LF,
- human leukocyte elastase – HLE.

ANCAs are a useful laboratory indicator not only for diagnosis, but also for determining disease activity and assessing the effectiveness of therapy.

Treatment



p-ANCA

In general, treatment of ANCA-positive vasculitis can be divided into **treatment induction** to induce disease remission and **treatment maintenance** to maintain remission. Corticosteroids are usually based on prednisone 1 mg/kg/day, and are gradually reduced after a month. Some authors recommend routine use of cyclophosphamide in all Churga-Strauss syndrome patients.

In the maintenance treatment, the administration of corticosteroids in a dose of prednisone 5-10 mg/day and cyclophosphamide is continued , often replaced by the less toxic azothioprine (2 mg/kg/day). Other immunosuppressants can also be used in maintenance treatment - methotrexate, mycophenolate mofetil or cyclosporine A. In multi-organ involvement refractory to combined treatment, the administration of high-dose immunoglobulins or interferon α has proven to be effective.

Before corticosteroids were introduced, half of patients died within 3 months of the first signs of vasculitis and less than 5% of patients survived for 5 years. Currently, more than 75% survive for five years thanks to combination treatment.[1]

Conclusion

Rare systemic vasculitis associated with an increase in ANCA antibodies mainly affects the vital organs (lungs, kidneys), therefore they have a very poor prognosis without treatment. Glucocorticoids and cyclophosphamide, when diagnosed early, can significantly prolong patients' lives and reduce the development of chronic kidney failure during dialysis or after transplantation. In recent years, research has focused on synthesizing new drugs with similar potency but less toxicity.

As this is a very rare disease, patients with CSS are clearly indicated for care in specialized centers and under conditions of interdisciplinary cooperation.

Links

Related Articles

- Systemic vasculitis

Source

Courtesy of author Jan Michálek

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