LABORATORY DIAGNOSIS OF ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH HEMORRAGIC VASCULITIS

Saidov A.B.[1]
Islamova Z.S.[2]
Sayfutdinova Z.A.[3]
Nurillaeva G.S.[4]
[1-2-3-4]Tashkent medical academy
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Abstract
The vasculitides are characterised by vascular inflammation. Endothelial injury is central to the pathogenesis of vasculitis . As a result of the immune – inflammatory necrotic changes in the walls of vessels in the patients with hemorrhagic vasculitis endothelial dysfunction of arterioles and capillaries occurs, contributing to violations of blood rheological properties and microcirculation. Vasculitis can cause abnormal findings an blood counts. Anemia is a typical finding in patients with active vasculitis . A slightly elevated white blood cell count may also occur. Elevated inflammatory markers (erythrocyte sedimentation rate and C – reactive protein) are also frequently identified in patients with active vasculitis . These processes depend on the age of patients. This thesis focuses in particular on circulating endothelial cells , growth factors involved in vasculogenesis and endothelial progenitor cells.
Key words : endothelial dysfunction, hemorrhagic vasculitis, microcirculation , endothelial injury.

Endothelial cells are supported by a basement membrane that is surrounded by a basement membrane that is surrounded by varying thicknesses of smooth muscle and connective tissue depending on vessel type and function . In the microvasculature where smooth muscle is absent , pericytes also sit within the basement membrane and surround the endothelium with long cytoplasmic processes (Alllt and Lawrenson 2001). Prior to the discovery of the of the vasodilator prostacyclin in 1979 (Bunting et al 1976) the endothelium was considered to be an inert barrier . However , researches shows that the endothelium plays a role in many vital functions including regulation of vessel tone and blood flow , fluid and solute exchange , haemostasis and coagulation , vasculogenesis and inflammatory responses.

The vasculitides are a group of disorders characterized by the presenceof inflammatory cellular infiltrates in the wall of blood vessels, with resultant tissue ischemia and necrosis. Vasculitis can affect blood vessels of all size and

can occur as the primary disease manifestation or secondary to other conditions , such as infection, rheumatoid arthritis, scleroderma,.

There are a number of well described inflammatory pathways that culminate injury to the endothelium that are beginning to be understood . the predominant theory as to how vasculitis is initiated is the combination of an environmental trigger occurring in an individual with a background genetic susceptibility.

A number of autoantibodies directed against the endothelium have been detected in vasculitis . The antigens targeted by anti endothelial cell antibodies encompass a broad spectrum and remain poorly identified. Anti endothelial cell antibodies positive sera displays a broad reactivity against endothelial cell from many different locations (Praprotnik et al 2001) and different species and murine as well as a number of other targets , including extracellular matrix. Anti endothelial cell antibodies from the sera of patients with Wegenrer's Granulomatosus are able to activate endothelial calls directly , up regulating expression of adhesion molecules such as E – selectin and inducing production of proinflammatory cytokines and chemokines including IL-1 , IL- 6 , IL- 8 , and MCP – 1 via NFkB activation . Anti endothelial cell antibodies have also have been shown to induce apoptosis of endothelial cells and upregulate tissue factor.

Hemorragic vasculitis is accompanied by severe disorders of the blood vascular and rheological properties which are involved in the pathogenesis of lesion of skin (endothelin – 1 , surface tension), joints (only surface activity), kidney (prostacyclin , cyclic guanosine monophosphate) had heart (endothelin – 1 , viscoelastic modulus) . At that the integrated indicators of vascular endothelial function , viscoelastic , surface – active and relaxation characteristics of serum depend on the age of the patients in the beginning of disease , the degree of activity of the pathological process , the clinical form of disease course .

The term biomarker was defined as an objectively measured characteristic which could be utilized as a clinical outcome. Currently clinical outcomes which can be utilized in clinical trials for vasculitis are limited and include parameters such as mortality , although in the short term and in children particularly this is not a useful outcome as it is so slow. This biomarkers such as those describe herein must be utilized in the future too allow more realistic clinical endpoints in trials .

Conclusions: This study has been underlined by the common pathology of all the vasculitides – endothelial injury . By focusing on this pivotal consequence of inappropriate and sustained inflammation in the vessel wall , a number of putative biomarkers which have potential to be utilized clinically to assess

disease activity , (particularly that which may not have overt clinical symptoms) have been assessed .During this study it also became apparent thart children may have differences relating to vasculogenic responses when compared to adults and that therapy necessary to promote disease remission may be influencing pathway involved in reparative responses and thus could impact on the long term health of the vasculature .

References:

1. Aase K, von E G , Li X, Ponten A , Thoren P , Cao R , Cao Y , Olofosson B , Gebre – Medhin S , Pekny , Alitalo K, Betsholtz C , Eriksson U. Vascular endothelial growth factor – B deficient mice display an atrial conduction defect . Circulation 2001 (104) :358-664
2. „Endothelial injury and repair in vasculitis of the young “ Lindsey Anne Clarce
3. Arneth B and Arneth R .(2021) Neutrophil Extracellular Traps and Vasculitis .
4. Braisier A R (2010) The nuclear factor-kappa B- intereukin 6 signalling pathway mediating vascular inflammation . Cardiovas. Res. 86, 211-218
5. Pagnoux C, Cohen P , Guillevin L. Vasculitides secondary to infections. Clin Exp Rheumatol 2006 (24)
6. Palit A , Inamadar A C. Vasculitis : approach to diagnosis and therapy . Indian J Dermatol Venerol Leprol 2006 (72)
7. Puechal x. Antineutrophil cytoplasmic antibody – associated vasculitides. Joint bone Spine 2007(74)