

7th European Ophthalmology Congress

December 05-06, 2016 Madrid, Spain



Richard Luscan

SFO Member, France

Anatomical evidence for a dialysis phenomenon (choriodialysis) between choroid and posterior retina

A dialyzing structure consists of two compartments separated by a semipermeable membrane and animated by opposite flows, which increases the exchange surface. A pressure gradient (a dialyzing bath depression) between both compartments directs fluid and ion exchanges but not necessarily those of gases. Clotting is avoided by heparinization of the hemodialysis blood compartment. According to Poiseuille's law $[D = \text{flow rate} = ((\pi r^4)/(8n l)) \times (P_1 - P_2)]$, the session's efficiency depends on the homogeneity and the importance of the blood flow which will condition the exchange surface. All rheological disorder from hyper-viscosity or partial thrombosis will alter this efficiency by reducing flow and condition the presence of deposits called "protein-cakes" on the dialysis membrane, compounded by depression of the bath. The aim of the study was to compare the anatomical and functional unit choriocapillaris/posterior retina [pigmentary epithelium (PE)+outer segments of vision cells (OSVC)] to that of a dialyzing structure. An anatomical structural comparative analysis between an artificial capillary kidney cartridge and the couple choriocapillaris/macular posterior retina is performed. It is confronted with the drusen and pseudo-vitelliform deposit wash-out resorption flows obtained by vortex vein occlusion (VVO) in AMD. That flow will be characterized by the mean of cine angiography ICG and OCT exams before and after VVO procedure. The two compartments are firstly choriocapillaris which may be equated with a dialyzing bath driven by a rather centrifugal flow; secondary the couple PE+OSVC as the dialyzed sector is driven by a centripetal flow. The bruch membrane composed partly of protein glycans (similar to heparin composition) is the semi-permeable membrane. The pressure gradient is consisted by the epithelial pigment physiological one. Drusen and basal linear deposits on bruch's membrane reveals analogy with the "protein-cakes" deposit. The drusen resorption flow observed by OCT follows centrifugal choriocapillaris blood flow direction. That was demonstrated by cine angiography ICG comparison before and after VVO procedure, showing choriocapillaris new recruitment flow restoration and confirming the existence of a dialyzing function. Disruption of the rheological choriocapillaris hemodynamics could limit or alter the function of the dialyzing choriocapillaris upon posterior macular retina and be a starter in some choroidal pathogenic diseases, especially in AMD, where the ischemia is a cofactor recognized. This is for a choriocapillaris supply disease but the dialyzing function impairment could be realized by failure of the venous drainage proximal or distal. In those cases venous staining will provoke consequently local hyper-pressure and create a collection of edema by pigment epithelium pump blockage. Central Serous Chorio-Retinopathy (CSCR) seems to be a concerned disease by this pathogenesis. Anatomical and functional resemblance to that of a dialyzing artificial capillary kidney cartridge, the choriodialysis term is suited to describe the purifying function of the choriocapillaris upon posterior macular retina.

Biography

Born in March 23 of 1949, medical studies 1967/77, including residency in Cardiology and Artificial Kidney Unit. SFO Member since 1980, SFO Oral Presentation 2005, E Poster EVRS Member since 2006, Best scientific Poster 2006 ASRS/EVRS Meeting Cannes Retina Festival, EVRS Oral presentation Prague 2008/Sevilla 2012/ and Film Porto 2014. All présentations up on the Vortex Vien Occlusion VVO concept.

r.luscan@wanadoo.fr