Summary

Angiogenesis is a dynamic process involving the active dissolution of the extracellular matrix and subsequent vascular endothelial cell proliferation, migration, and adherence to form a new lumen.

This process is a complex multistep phenomenon involving many growth factors and interactions between a number of cell types with expression of pro-angiogenic growth factors in cells of the target tissue and suppression of anti-angiogenic factors.

Expression of angiogenic growth factors can be induced as a response to hypoxic stress, hormonal stimulation, endothelial cell injury, glucose intolerance and mechanical stress, release of inflammatory proteins and activation of oncogenes.

These growth factors can act additively or synergistically to promote the angiogenic behavior and most of growth factors exert greater effects only in specific combinations.

It is hypothized that the angiogenic process represents the net balance between angiogenic stimulators and inhibitors that regulate the switching of angiogenic process.

Elevated vitreous and aqueous VEGF levels strongly correlate with retinal neovascularization.

Neovascularization can involve any tissue in the eye, but the tissues that are most commonly affected are the cornea, the iris, the retina, and the choroid.

Which diagnosed by Slit lamp biomicroscopic examination, ultrasound, fluorescein angiography and Optical Coherence Tomography.

And treated with laser photocoagulation which causes destruction of the oxygen consuming photoreceptors.

Summary

A non-thermal, photochemical treatment modality allows the treatment of a vascularized target tissue with preferential selectivity wich called Photodynamic therapy.

Freezing the retina to create inflammation in the area of application forming retinal scars with little difference in the strength of the chorioretinal scar created by laser photocoagulation.

Cryotherapy useful in the case of hazy media or cataracts. It is also useful in treating more peripheral lesions that cannot be easily visualized at a slit lamp.

Vitreoretinal surgery and vitrectomy itself with the current techniques, the three major indications for vitreoretinal surgery in retinal vascular disease are destruction of ischemic retina and pathological vessels, removal of dense vitreous opacities and release of traction and retinal detachment repair.

Anti-VEGF therapy is a promising avenue for the treatment of neovascular diseases of the eye.

Intravitreal injections are given on a frequent basis, often as frequently as monthly. The primary indication for anti-VEGF therapy is for treatment of neovascular AMD, but anti-VEGF injections are also given for other conditions, including central and branch retinal vein occlusions, diabetic macular edema, proliferative diabetic retinopathy, cystoid macular edema, and neovascular glaucoma. With these increases in patient volume and number of injections has come increased concern about potential complications. Complications of intravitreal injections include iatrogenic cataract, retinal detachment and intraocular infection, or endophthalmitis.