

Keynote lecture on laser treatment of vascular skin lesions: a breeding ground of new developments?

Reported by TCH Chan 陳上熙

Date: 22 March 2010
 Venue: Hong Kong Academy of Medicine Jockey Club Building
 Speaker: Professor J Stuart Nelson
 Professor of Surgery, Dermatology and Biomedical Engineering, University of California-Irvine
 Organisers: The Hong Kong Association of Specialists in Dermatology; The Hong Kong Society of Dermatology and Venereology; Hong Kong Society of Plastic, Reconstructive & Aesthetic Surgeons

The theory behind laser therapy in treating vascular lesion is to let the target blood vessels selectively absorb energy from the light. Green-yellow light is effective in treating vascular skin lesions such as facial angioma, telangiectasia secondary to rosacea, post-traumatic venous lake and recently formed post-traumatic keloidal scar.

Treatment of infantile haemangioma

Pulsed-dye-laser (PDL) is commonly used in the treatment of infantile haemangioma. It works by selective photothermolysis. Early and repeated treatments of infantile haemangioma with PDL can achieve good results. It has been shown that PDL can induce endothelial cell apoptosis.

Propranolol can also be used to treat infantile haemangioma with promising result. Propranolol acts by blocking matrix metalloproteinases and therefore prevents blood vessels from infiltrating the skin. It also acts by blocking tubulin formation in angiogenesis. Satisfactory results can be achieved by combining propranolol, PDL and

steroid in the treatment of infantile haemangioma. It is important to observe the possible side effects of propranolol such as bradycardia, hypotension and hypoglycaemia.

Treatment of port wine stain

It is important to start treatment early (e.g. in the first week of life) and to treat aggressively. Different laser machines can be used to target blood vessels of different sizes. The Alexandrite laser can give good results on thick and nodular port wine stain.

Re-darkening of port wine stain after PDL treatment can sometimes occur. This is mainly due to revascularization of the damaged blood vessels. It has been shown that the pluripotent stem cells for new blood vessels actually migrate from the adjacent hair follicles.

Rapamycin is an antifungal, antitumour and immunosuppressive agent which has been shown to block the transcription of vascular endothelial growth factor. There is emerging evidence showing that topical rapamycin in combination with laser can achieve better result in treating port wine stain.

Learning points:

Infantile haemangioma and port wine stain, if intervention is indicated, will need early and aggressive treatment in order to achieve good results. Propranolol may give promising result in treating infantile haemangioma. Rapamycin, when combined with laser, is useful in the treatment of port wine stain.