

## Concept of *Urdhwaga Raktapitta* in Ophthalmology

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### Abstract

*Raktapitta*, caused by vitiation & combination of *pitta* & *rakta*, is manifested as bleeding through all the external orifices of body. *Urdhwaga* especially *netragata raktapitta* is always taken as subconjunctival haemorrhage. But, in fact it is complex disorders associated with increased blood stasis & arteriosclerotic changes in ocular blood vessels. Retinal blood vessels, even among them, are more prone to such changes. Hence *raktapitta* can be correlated with retinopathies and diseases associated with vascular occlusive disorders.

**Keywords:** *Urdhwaga Raktapitta*, Retinal vessels, Haemorrhages, Arteriosclerotic changes

### Introduction

*Raktapitta* is roughly considered as a bleeding disorder or bleeding from one of the external orifices of the body. But in fact, *Raktapitta* not a mere bleeding disorder but a complex caused by a complex disorder caused by vitiation, association and combination of vitiated *Pitta* with its *Aashraya Rakta*.<sup>(1)</sup> *Shuddha Rakta* is associated with wellbeing of human being, a popularly said by Acharya Sushruta “Raktam jiva iti sthiti”.<sup>(2)</sup> But when vitiated with different *Doshas*, it causes wide range of diseases. Such vitiation of *Rakta* by *Pitta Dosha* leads to increase in *Ushnata* & *Tikshnata* of blood, nothing but change in osmolarity of blood. Such hyper-osmolarised blood disturbs capillary exchange of fluids, leading to excessive absorption of tissue fluid, popularly described as “*Dhatu swedana*” by Charakacharya.<sup>(3)</sup> This increased volume of blood inserts more & more pressure on capillary walls, finally leading to their rupture and actual haemorrhage aka bleeding.

When, vitiated *Pitta* is also associated with vitiated *Kapha*, it leads to bleeding from seven orifices situated in upper parts of body i.e two nasal cavities, two ears, two eyes and on mouth. Bleeding from eyes is often taken as the Subconjunctival

haemorrhage. But should it be restricted to visual conjunctiva only. Other parts of eyeball, even if not visualized with naked eye, do get affected during pathogenesis of *Raktapitta*. And this pathogenesis affects vision of affected person adversely. Hence, in this article association of *Urdhwaga Raktapitta* with different ophthalmic disorders will be discussed.

### Material-Methods

Literature from two main sources is studied during this research. First classical ayurvedic texts like Brihat-trayi, Laghu-trayi & modern text books and reference books like Parson's diseases of eye, comprehensive ophthalmology by Khurana & medicine by Harrison. While trustworthy search engines like google scholar & pubmed are used to search about recent research about the topic.

### Discussion

The bodily structure first to affect in *Raktapitta* are blood vessels. These blood vessels are considered as one of the *Mollasthanas* of *Raktavaha Strotas* by Acharya Sushruta.<sup>(4)</sup> So when affected by vitiated *doshas*, these blood vessels shows typical signs of Vitiated *Strotas*.<sup>(5)</sup> [Table 1]

**Table 1 : Manifestation of *Strotas Dushti***

Manifestation	Interpretation
Attipravritti	Excessive but defective growthIn this case Neo-vascularisation
Sanga	Defect or occlusion in normal flow associated with changes in lumenVascular occlusion & Arterio-sclerotic changes
Sira Granthi	Formation of cystic growthsMicroaneurysms
Vimarga-gamana	Misdirection flow of content of strotasHaemorrhages & exudation of contents of blood

Eyes , as a medium of sense of vision , are one of the most important organs in he body. Diseases affecting eyes affect the vision depending on the involvement of ocular structures. *Urdhwaga Raktapitta* can be related with following conditions :

#### ➤ Subconjunctival Haemorrhage:

Subconjunctival haemorrhage is well considered as *Netragat Raktapitta*. Small vessels of conjunctiva easily burst open even on minute trauma may it be external or internal. Even though subconjunctival haemorrhage is caused by local trauma or local factors like severe conjunctivitis can not be taken under the entity of *Urdhwaga Raktapitta* , that caused because of systolic hypertension, old age or bleeding disorders is surely related with *Raktapitta*.

Systolic hypertension is associated with two main events , increased blood volume and arteriosclerotic changes. As discussed earlier, increased  $\text{Na}^+$  concentration in the blood leads to change in osmolarity & increase in volume of blood. This can be corelated with *Dhatuswedana* mentioned in pathogenesis in *raktapitta*. While arteriosclerotic changes are associated with *Srotas Dushti*. Finally leading to *Vimargagamana* of contents in this *srotas* manifested by haemorrhage in patent subconjunctival space.

Similarly subconjunctival haemorrhages seen in cases of blood disorders like purpura are more associated with vitiation of *Rakta* by *Tridoshas* mainly *pitta* & *kapha*. While sudden and recurrent haemorrhages in old age are more attributed with increased fragility of blood vessel related with *Dhatu kshaya* & *Avarana of kapha* around blood vessels leading to their thickening.

#### ➤ Ciliary Staphyloma :

Ciliary staphyloma is ectasia of sclera along with incarceration of ciliary zone. It is associated with developmental & end stage glaucomas.<sup>(6)</sup> Glaucoma ,in the end, is caused by blockage in normal outflow of aqueous humor leading to formation f back-pressure on all of the ocular structures. This stagnancy in turn leads to localized formation of *Aama* further leading to localized but irreversible vitiation of *Doshas* and *Avarana* of blood vessels by *Kapha*. Which in turn leads to formation of *Siragranti* which bulges out with overlying sclera.

#### ➤ Diabetic Retinopathy :

Diabetes is a systemic metabolic disorder associate with multi-organ disorders when uncontrolled. Generally it is corelated with *Prameha* but intricate pattern of *Doshas* acts differently in every case. When it comes to diabetic retinopathy, we have to consider two things, first is pathogenesis of root cause diabetes mellitus & second is *Patalagata doshadushti*.

DM is a *Kaphajanya* & *Aamaja* disorder. The vitiated *aama* mixed with *Rakta* again leads to increase in amount of *Rakta*. But this *Rakta* is not *Shuddha* because of presence of *Aama* or *Apachit bhaga*. This vitiated & excessive *rakta* causes increased pressure on capillaries.<sup>(7)</sup>

Retinal blood vessels due to their smaller lumen are more prone to such changes leading to disruption in their structure finally leading to actual haemorrhages. Hence , different stages of retinopathy can be compared with different stages of *urdhwaga raktapitta*. [Table 2 & 3]

**Table 2 : Correlation of signs of diabetic retinopathy with Strotodushti**

Signs of Diabetic Retinopathy	Strotodushti in Raktapitta
Microaneurysm	Formation of nodule-like structure in blood vessel Similar to Siraj Granthi
Intraretinal microvascular abnormalities	Changes in vascular lamina Arteriosclerotic changes Sanga in lumen
Venous beading	Near area of retinal non-perfusion Wall of retinal vain loose parallel alignment Sanga in lumen
Hard exudates	Exudation of lipid rich fluid from retinal blood vessels Vimarga-gamana of contents of blood vessels
Cotton wool spots	Exudation of plasma rich fluid from retinal blood vessels Vimarga-gamana of contents of blood vessels
Retinal haemorrhages	Actual oozing of blood from retinal blood vessels Vimarga-gamana of contents of blood vessels
Neovascularization	Excessive growth of fragile blood vessels in & aroun non-perfused retinal area Atipravutti of siras
Macular oedema	Exudation & swelling of intra-retinal layers at macular region Formation of Shotha as Upadrava

**Table 3 : Correlation of stages of diabetic retinopathy with *Raktapitta***

Gradation of Diabetic Retinopathy	Characteristics	Correlation with stages of <i>Raktapitta</i>
Mild non-proliferative diabetic retinopathy	Microaneurysms	<i>Purvarupavastha</i> (Defect limited upto blood vessels only)
Moderate non-proliferative diabetic retinopathy	Microaneurysms. Hard exudates. Cotton wool spots Intraretinal microvascular abnormalities. Moderate retinal haemorrhages	<i>Roopavastha</i> (Exudation of contents of blood vessels either in form of plasma or actual blood)
Severe non-proliferative diabetic retinopathy	Severe haemorrhages in 4 quadrants. Venous beading in 2 quadrants IRM	Full blown <i>Roopavastha</i>
Proliferative diabetic retinopathy	Neovascularization	<i>Upadrava Avastha</i> (Misdirected blood vessels)
Macular oedema	Macular oedema	<i>Upadrava Avastha</i> ( <i>Shotha</i> or swelling)

#### ➤ Hypertensive Retinopathy

Among all sensory organs , eye or retina is affected primarily in systemic diseases like hypertension due to smaller calibre of retinal arteries. This leads to 35% dilation on mechanical stretch , which is up to 15% for other arteries , making them more prone to sclerotic changes and altered permeability.<sup>(8)</sup> And he hypertension is exactly caused by these two things only.

Psychological cause of hypertension is mental stress while physiological causes are associated with increased salt consumption , smoking & more intake of caffeinated drinks. All of these increases *Ushnata* & *Tikshnata* in the body. Leading in turn to vitiation of *Pitta*. This vitiated *Pitta* causes disruption of capillary pump increased blood volume.

While sedentary lifestyle & *Medosanchaya* in obesity are associated with vitiation of *Kapha* & *Avarana* of blood vessels by *kapha-meda* is the cause of arteriosclerotic changes. Hence hypertension itself can be correlated with *Raktapitta*.

Hypertensive retinopathy is actual presentation of these changes seen in *urdhwaga raktapitta* presented as *Siragranthi* in form of vascular tortuosity, AV nicking & copper wire reflex. While actual retinal haemorrhages can be seen in advanced stages of retinopathy.

#### ➤ Branched & Central Retinal Arterial Occlusion

Retinal arteries get occluded by arteriosclerotic changes, leading to *sanga* or disturbance in normal blood flow & formation of ischemic areas in affected areas along with neovascularization. These can be correlated with different signs of *raktapitta* as described in table 2.

#### ➤ Branched & Central Retinal Venous Occlusion

These conditions are caused by venous stasis either due to excessive use of *ushan-tikshna* corticosteroids or venous thrombosis seen in elderly people. Such occlusion of venous structures leads to actual retinal haemorrhages along with engorgement of vessels which is seen in *vimarga-gamana* & *sanga* stages of *strotodushiti*.

#### Conclusion

*Raktapiita* is one of the important disorder, explained in ayurveda, described after *hwara*. It is generally taken as subconjunctival haemorrhage, when it comes to ophthalmology. But we can correlate it many disorders like subconjunctival haemorrhage, ciliary staphyloma, retinopathies and arterial or venous occlusions. Hence one should consider aspect of *raktapitta* while managing these disorders.

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