

RATIONALE OF TARPANA THERAPY AS EMERGING INNOVATION IN OPHTHALMOLOGY

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Article Received on

06 Sept. 2016,

Revised on 26 Sept. 2016,

Accepted on 16 Oct. 2016

DOI: 10.20959/wjpr201611-7271

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ABSTRACT

Shalakya Tantra is a branch of Ayurveda dealing with the disorders above clavicle. It has been enumerated among one of the 8 branches of ayurveda showing its significance. There is vast description of all the ocular disorders and their treatment as well as preventive measures that should be practiced to keep ones eye healthy. So here a unique procedure called as tarpana therapy under category of kriyakalpa is being picked here to discuss and analyze the benefits, outcomes, as well as disadvantages and shortcomings and pitfalls that one face

through the treatment. in addition it is being explored that in spite of having so much advancement in the field of ophthalmology in terms of diagnostic techniques and surgical procedures, still there are certain ocular diseases that are not to be fully cured till now, In fact they are totally untreatable through recent trends like retinopathies, optic atrophy, glaucoma, age related macular degeneration, refractive errors and so on. Hence, tarpana procedures are best treatment for such disorders that we will see in this article.

KEYWORDS: Shalakya Tantra, ophthalmology, tarpana, ocular diseases, kriyakalpa pharmacokinetics.

1. INTRODUCTION

Ophthalmology is now a days is greatly innovating day by day in terms of its diagnostic technology hence treatment procedures especially in surgical aspects. But along with these advances the modern ophthalmologists have some challenges that compelling them to find the solution through other science like our ayurveda the oldest and the most scientific science till now. whatever disease is concerned in the whole medical fraternity is being already described along with its vast treatment in our ancient texts. similarly in ophthalmology there

are so many diseases that are yet fully under surgical treatment are very well treated by them, though certain ocular disorders like diabetic retinopathy, hypertensive retinopathy, age related macular degeneration, optic atrophy, glaucoma, congenital disorders, refractive errors and so many are the thirst areas in ophthalmology that compelling the world scientist to face the ayurveda with a hope of finding better treatment in this regard. And as we know ayurveda is the science that eradicate the disease from its root cause and also it mainly emphasizes over the prevention of the disease,. so in this regard ayurvedic ophthalmology is a great treasure for the cure of such diseases and it also mentions various preventive measures from ocular disorders too through its specific treatment. Kriyakalpa procedures as described in our ancient texts are the protocols that are to be followed even for keeping our eyes healthy as well as to treat diseases too. Thus here we are going to give a deep insight to one of the most common and effective measure of kriyakalpa. The Eye is the most beautiful organ gifted by God to human beings. It's very much needed organ for physical, social and intellectual development of a person. Without vision the whole world is a dark place. Eye is the prime sense organ among the all sense organs. Shalakyatantra is one of the branches of Ashtang Ayurveda which deals with the diseases above the clavicle. Its founder is said to be Acharya Nimi. Kriyakalpa are the special procedures indicated in various ocular conditions. The specific procedures in which the various prepared drugs are applied to the eye in various manners are termed as kriyakapla in whole. Acharya Sushruta has stated 5 types of Kriyakalpa, it includes Tarpan, Putpaka, Seka, Aschyotana and Anjana^[1] Whereas Acharya Sharangdhara has added Pindi and Vidalakain Kriyakalpa. Before going into the details of tarpana therapy we here go through the brief description of ocular drug pharmacokinetics so that it would be better to understand the mechanics of tarpana therapy too. Ocular therapeutics^[2] includes topical routes (drops, ointments, ocuserts, gel) periocular route (sub conjunctival, sub tenons, peribulbar, retrobulbar) intraocular injectable and systemic. among these eye drops are the most commonly used medication that includes aqueous solutions as suspensions. Others like gels and ocuserts are also used. In aqueous form the drug is totally absorbed as it is completely soluble and hence the tissue contact time is less though it has immediate action, where as in suspensions, the tissue contact time is more in ointments and gels have more bioavailability. Intraocular penetration of systemic drug depends on blood aqueous barrier that is affected by lipid solubility and molecular weight of the concerned drug. As we know the epithelium and endothelium layers of cornea are hydrophilic while the stromal layer is lipophilic, hence keeping in mind all these points we now will focus in detail the mechanics of tarpana therapy.

The treatments protocols that are being elaborated in our texts in special reference to the shalakya tantra have the basic backbone as like treatment basis of other ayurvedic treatments means prevention from the diseases. as we know very well ayurveda emphasizes that prevention is better than cure as per the treatment part is concerned it concerns to break the pathogenesis of diseases keeping in view the disease pathology that can only be achieved through proper channels of ayurvedic treatment protocols that is the shodhana and shaman therapy. Keeping in view this basic theory any ophthalmologist can approach to the treatment of disease. The first and foremost requirement for the indication of tarpana therapy is that the patient must be purified through vamana, virechana procedures and then tarpana can be initiated in morning or afternoon.^[3]

Procedure –the person is allowed to be seated in a room void of wind and sunrays, dust. a circular boundary made of moistened powder of black gram, even firm and comfortable should be raised around each orbital fossa. Then eyes to be filled with clear ghee liquefied in warm water upto tip of eye lashes held for 500 vak matra kala, (unit of time equal to pronouncing a short letter) in healthy while 6, 8 and 10 hundred vak in kapha, pitta, vata respectively. Then sneha should be drained out from side of outer canthus and eye should be cleaned with steamed barley flour. Then kapha aggravated by sneha should be eliminated with suitable smoking. Maximum period of tarpana is 1 day or three day or five days.^[4]

2. Benefits of having proper tarpana

Easy sleep and awakening, absence of dirt, clear vision, cheerfulness, alleviation of disease, promptness in functions. Excessively saturated eye becomes heavy, turbid, too unctuous, having lacrimation, itching, sliminess irritation with dosa. Deficiently saturated eye is rough, turbid, tearful intolerant to sight and with advancement of disease. in these two conditions, the learned should apply treatment, according to predominance of dosa, with smoking, snuffing, collyrium and irrigation, rough or unctuous as necessary. these should be used rough in predominance of pitta and kapha while unctuous in that of vata.

3. Effects of tarpana

Eye which sees as if darkness, is excessively dry, rough, too hard, with fallen eyelashes, dirty, poor in vision, highly afflicted with diseases achieves strength, energy verily by saturation undoubtedly.

4. Contraindications

It should not be done in cloudy weather, extreme hot and cold seasons, in conditions of anxiety, exhaustion and giddiness and if complications have not subsided.

5. Some important and common formulations for tarpna that are indicted in our texts are triphala ghrita, mahatriphala ghrita, jeevantyadi ghrita, patoladi ghrita for various disorders of eye.

6. DISCUSSION

Thus after having a sneak view of the literature knowledge we have to analyze it in the present scenario. Development of new drug candidates and novel delivery techniques for treatment of ocular diseases has recently accelerated. Treatment of anterior-segment diseases has witnessed advances in prodrug formulations and permeability enhancers. Intravitreal, subconjunctival and periocular routes of administration and sustained-release formulations of nanoparticles and microparticles, as well as non biodegradable and biodegradable implants to deliver drugs to the posterior segment of the eye, are becoming popular therapeutic approaches.^[5]

In this regard ayurveda can help a lot as our approach of drug delivery through tarpana therapy provides more tissue contact time and hence increases absorption rate and hence beneficial in the anterior as well as posterior segment eye disorders. Millions of people suffer from a wide variety of ocular diseases, many of which lead to visual impairment and ocular blindness and cost the federal government approximately \$4 billion annually.^[5] Certain ocular diseases are quite rare, whereas others, such as cataracts, age-related macular degeneration (AMD) and glaucoma, are very common, especially in the aging population.

Ocular bioavailability after topical ocular eye drop administration, the most common form of ocular medication, is less than 5% and often less than 1% and therefore, only the diseases of the anterior segment of the eye can be treated with eye drops. Blood-ocular barriers, including tight junctional complexes between ciliary and retinal pigmented epithelium, nonfenestrate and iridal capillaries and P-glycoprotein efflux pumps, are defense mechanisms to protect the eye from circulating antigens, inflammatory mediators and pathogens.^[5]

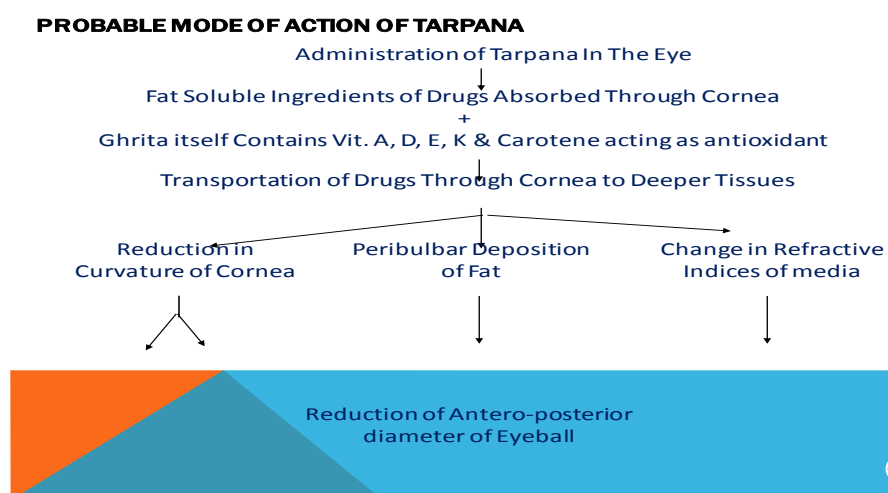
7. Advantages of tarpana therapy

- Increase the ocular bioavailability of drug by increasing the corneal contact time, by effective adherence to corneal surface
- Provide target within the ocular globe so as to prevent the loss to other ocular tissues.
- Circumvent the protective barriers like drainage, lacrimation and conjunctival absorption.
- Provide comfort, better compliance to the patient and improve therapeutic performance of drug.

Unfortunately the present status of kriyakalpa procedures is not so common among general people because of today's busy lifestyle, lack of acceptability due to complicated methodology, preparations are time consuming, lack of standardization, lack of communication among institution, lack of communication among generations, lack of Publication and many more. Although it is useful in so many disorders of present era that are hazardous and annoying to the clinicians as example Progressive Myopia and other refractive errors, Spring Catarrh and other allergic conditions of the eye Scleritis, Episcleritis, Iridocyclitis, Choroiditis, Uveitis, Cataract, Glaucoma, Vitreous related disorders, Retinitis Pigmentosa Macular degeneration and other maculopathies, Vascular diseases of retina, Optic atrophy and other degenerative disorders of retina, Diabetic retinopathy and related diseases.

8. Pharmacokinetics of tarpana^[6]

- Absorption is very high as drugs are lipid soluble; penetration of fat soluble substances is high irrespective of molecular size.
- Highest and significant therapeutic concentrations are achieved.



Some contradictory points suggest also that initially tarpana disturbs tearfilm layer and corneal integrity.

Questions yet to be solved

- ❖ To what extent will choroid blood flow limit drug delivery across the tissue surface ?
- ❖ Will pharmacokinetics of these types of drug delivery be compatible with long-term sustained release drug delivery?
- ❖ Can regional differences in corneal thickness be taken advantage of to enhance drug delivery?
- ❖ To what extent will binding of drugs to extracellular matrix affect drug delivery.?
- ❖ Can such delivery systems be developed that will permit site-specific drug delivery?
- ❖ Kriyakalpa is the mainstay of netra chikitsa, yet there is a long way, where we have to reach.
- ❖ Need for standardization of Kriyakalpa, so that it can be accepted among recent modalities of delivery systems.

In last few years practice of Kriyakalpa has increased, which is a good sign, but it still requires a coherent approach.

9. CONCLUSION

Thus here we see the ancient science can contribute a lot to the present scientific world in terms of its rich treasure of herbs, treatment methods and preventive measures in addition to the philosophy of life too. These standard procedures if applied in a proper way can prove as a boon for the drawbacks of the present science. In ayurveda the treatment is done either through kriyakalpa or through systemic chakshushya drugs along with shodhan procedures. The main aim of any pharmacotherapeutics is the attainment of an effective concentration at the site of action for a sufficient period of time to elicit the response. It is up to the science to correlate the observations with their scientific explanation In the light of above fundamentals of modern pharmacology; all the Ayurvedic ocular therapeutic procedures are relevant as such.

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