



Exploration of treatment modalities in *Keraliya visha chikitsa - Uttu chikitsa*

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Abstract:

Anybody at any time can experience *agantujavyadhis* and if not treated properly can lead to devastating permanent health problems. The branch *Agad tantra* deals with such category of diseases. This branch had flourished in old days, since poisoning was the major warfare technique. The clinical skills of professionals trained in *Agad tantra* is for accurate diagnosis and treatment had astonished even the invaders of the country itself. But now the treatment modalities exclusive for *Agad tantra* is on the verge of extinction. Lack of scientific evidences, trained professionals and institutional supports are the main reasons. Due to geographical peculiarities, Kerala had made remarkable contribution to *Visha chikitsa*. Kerala has developed its own snake bite management protocols by widely practicing *visha vaidyas* at that time and recorded in *Keraliya visha chikitsa granthas*. They had introduced special treatment modalities like *Uttu chikitsa*, *Talam*, *Tukkudhara* etc. This review details such a special treatment modality called *Uttu chikitsa* mentioned in *Vishavaidya Jyotsnika* and *Prayoga Samuchaya*.

Keywords: *Uttu chikitsa*, *Agad Tantra*, *Keraliya visha chikitsa*.

Introduction:

The word *Gada* means *roga* or disease as in *Gadanigraha*. *Agada* literally means *aroga*. During the classical period the word *gada* is also seen to have been used for *gara*. Anyhow the science which describes *agada* or *viṣanivāraṇa ausadhis* is known as *Agad Tantra*. It is known as *Visavaidya*, *Visa tantram* or *Damstra*

tantram also. Though the term used in *Charaka* as *Viṣagaravirodhika prasamana* as one of the eight *angas* of *Ayurveda* is more explanatory, the preference for the term *Agadatantra* indicated the generally increasing tendency in *Ayurveda* to rely more on *agada* other than measures than on *mantra* in treating *visha*, unlike in *Garudividya*, a specialised branch of learning in ancient days.

History records that when Alexander the Great invaded India and encamped near *Takkṣasila*, the skilled medical men from Greece could not cure cases of snakebite and that he had to seek the assistance of the local Indian physicians for the treatment of snakebites in his army. From *Kautilya's Arthashastra* it is evident that *visha vidya* was highly developed during his period. The state gave maximum encouragement for development in order to protect the king and his army as *visha* was freely used as a weapon to harm the enemy camp during the war. *Kautilya* himself was responsible for the development of this branch of knowledge. Perhaps *Nagarjuna* who redacted *Susruta samhita* and *Durdhabala* who redacted and made *Charakasamhita* complete, incorporated the available knowledge on *visha chikitsa* in the post-*Kautilya period* in to their respective *samhitas*. During post *Vagbhata* period *Ayurveda* itself underwent considerable change. *Visha chikitsa* also was left to the mercy of some tribals and traditional *vishavaidyas*. Works in Sanskrit and vernacular on *Visha chikitsa* like *Jyotsnika*, *Yogasara*, *Laksanamrta*, *Haramekhala*, *Vishavaidyatarangini* (*Vishacikitsā pravesika*, *Subodini prayogike vishavaidyam*), *Prayoga Samuchaya*, and *Vishavaidyasara Samuchaya*, etc. are examples for the keen interest in *Vishavaidya* in the south, particularly in this part of the country, where *sarpavisha* and *lutavisha* cases are of common occurrences. The geographical peculiarities of Kerala necessitated the development of *visha chikitsa* and gained much popularity. Practical knowledge of *Keraliya visha vaidya's* are well known and contributed several formulations and treatment procedures. Additional treatment modalities in *Keraliya visha granthas* include:

- 1) *Uttu*
- 2) *Talam*
- 3) *Tukkudhara*
- 4) *Vela Prayoga*
- 5) *Karu prayoga*

***Uttu Chikitsa* :¹**

This is considered as unique contribution of *Keraliya visha chikitsa tradition*. It is considered as an emergency treatment procedure administered in snake envenomation cases. But it is seen that, this treatment

procedure has been mentioned in *Yogaratanakara* as *phuthkara chikitsa*. Other references regarding this treatment procedure are found in *prayoga Samuchaya*, *vishavaidya jyotsnika* and *visha Vaidya Sara Sammuchaya*. This procedure was in practice among *keraliya visha vaidya*'s and now this treatment is on the verge of extinct.

The procedure has immense potential to regain the consciousness of victims. It was observed that this treatment procedure prevents complication like respiratory distress arising from poisonous bites especially in case of cobra envenomation.. The lack of persons trained for performing this procedure and lack of institutional supports are the reasons for extinction of such therapies.

Indication:

The treatment procedure called '*uttu chikitsa*' is said to be indicated when, *Visha* is residing in first three *dhatu*s. ²The first 3 *dhatu*s as per *keraliya visha chikitsa granthas* includes *twak, rakta and mamsa*.³ *Uttu chikitsa* is advised to start when the *Vaidya* observes the first 3 *visha vega lakshanas*. According to *keraliya visha chikitsa granthas*, when *visha* reaches the first *dhatu*, patient presents *horripilation* and in Second *dhatu*, sweating of whole body is seen. Discolouration of body and rise in temperature is observed when it reaches third *dhatu*. ⁴

Procedure:

It is a procedure of blowing medicated air into both ears and on vertex by 3 persons (other than the *Vaidya*) synchronically up to 150 times ⁵ Even though textual indication of the procedure is when *visha* resides in first 3 *vegas (dhatu)*. Practically it is done when the patient develops *sirogouravam* or practically when patient presents with dizziness and vertigo and blurring of vision. As soon as the patient develops dizziness, *anjana* with *vilwadi gulika / maricha* and *nasyam* with *vilwadi gulika* will be administered. After that if patient is not responding to *anjana / nasya* soon the treatment *Uttu* will be started. So it is considered to be more stimulating than *anjana* and *nasya*. And if this treatment fails, *Vaidya* is advised to do *kakapada chikitsa*.

Drugs used:

The procedure includes blowing of medicated air and for this, some drugs for chewing are cited. It contains *sunti, dushsparsha, maricha* and *vishavega* and all these 4 drugs are to be taken in equal quantity.⁶ In *Yogaratanakara*, while describing *Vrischika damsas chikitsa* it is said to chew *kasamarda* leaves and blow into

ears. Practically *sunti*, *maricha*, *tulasi moola* and 10 *vilwadi* / *visha vilwadi gulika* are the drugs taken for this procedure. These drugs will be chewed for 5-6 times / approximately for 2 minutes and then the 3 persons simultaneously will blow the air gently into both the ears and on vertex. After 1 blow they will again chew for next 2 minutes and the procedure is repeated. The procedure will be repeated until the patient regains the consciousness.

Ingredients

Table no : 1

Drug	Scientific Name	Family	Parts used
<i>Sunti</i>	Zingiber officinale	Zingiberaceae	Rhizome
<i>Dushsparsha</i>	Solanum xanthocarpum	Solanaceae	Whole plant
<i>Maricha</i>	Piper nigrum	Piperaceae	Fruit
<i>Visha vega</i>	Aristolochia indica	Aristolochiaceae	wholeplant

Contraindication:

It is contraindicated in *mandali damsha*. Even though there are no textual references regarding the contraindication, the practicing *vaidya*'s have seen complications when this has been performed in *mandali damsha*.

Discussion on probable mode of action:

The total effect of the treatment will be contributed by both drugs and the procedure. Since envenomation are emergency life threatening conditions, the plan of treatments will be very crucial upon which the life of the victims lies. Whenever a treatment is recommended in the very first stage of envenomation it will be aimed to arrest the spread of venom into deeper *dhatu*s. The symptoms like horripilation mainly indicates anxiety of patient (pilomotor reflex). In envenomation cases addressing the anxiety of patient is also important. The other symptoms like sweating, rise in temperature are produced as a result of sympathetic over activity. In third *visha Vega*, discoloration is considered as one of the symptoms. The reason for this may be capillary bleeding due to envenomation. As capillary bleeding sets in slowly the entire circulation will be disturbed. Besides the direct neurotoxic effect of snake venom, disturbances in circulation causes retention of

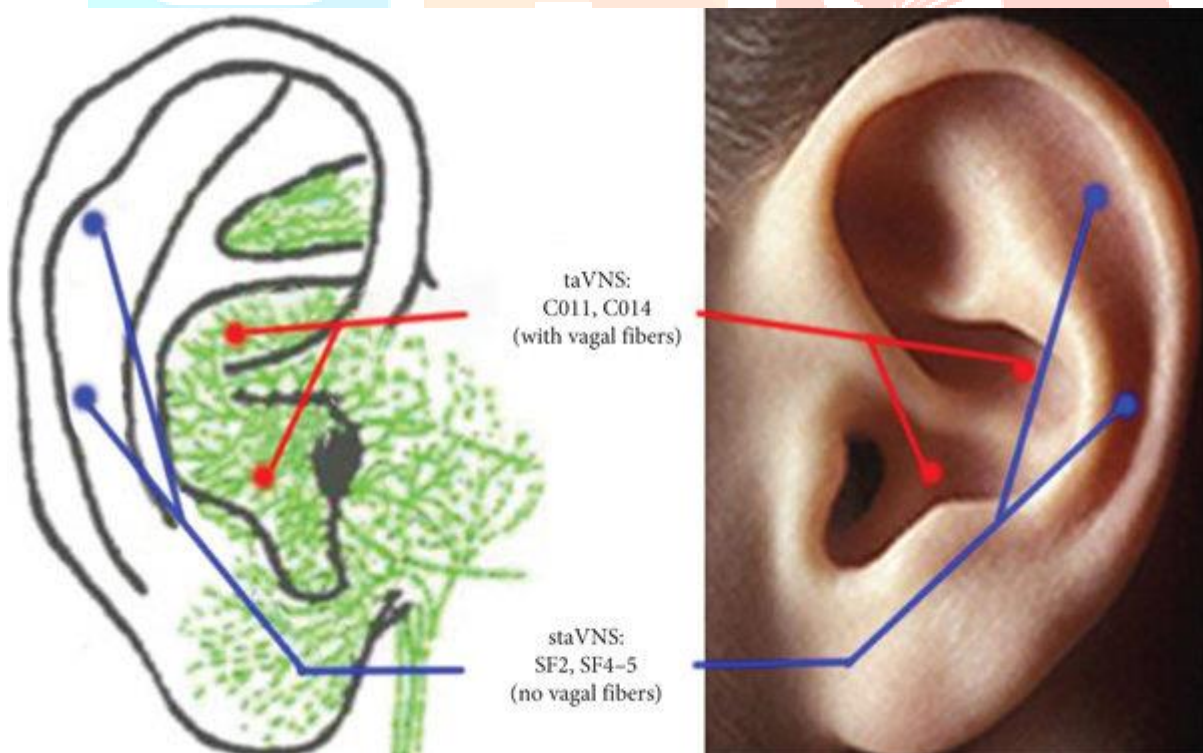
fluid inside the inner ear (labyrinthine) and changes in vestibular system cause dizziness in snakebite victim. A positive pressure application through external ear is helpful in relieving the dizziness caused by the disturbances in the circulation. The procedure utilizes a continuous gentle application of pressure waves into external ears and *moordha*. So this treatment helpful in reducing the symptom dizziness. Since this treatment modality is explained in the very first stage of envenomation (*first 3 vega avastha*), besides providing a symptomatic relief of dizziness it will be aimed to prevent the spread of *visha into uttarothara dhatu*.

The probable mode of actions can be explained in terms of postulating the theory of vagal stimulation.

Vagal stimulation:

There is a possibility that a rhythmic pulsatile blowing of air through external ear can stimulate the Vagus nerve. The outer ear is supplied by three sensory nerves: the auriculo temporal nerve, the greater auricular nerve and auricular branch of the vagus nerve (ABVN). The external auditory meatus and concha of the ear are supplied by ABVN.⁷

Figure no : 1



The vagus nerve (10th cranial nerve) transmits and mediates sensory information throughout the body to the brain. During its course, it innervates various structures such as larynx, pharynx, heart, lungs and gastrointestinal tract. Regulation of functions of various organs, glands and involuntary muscles throughout

the body is done by the sympathetic and parasympathetic components of autonomic nervous system (ANS). Since vagus nerve is a major component of ANS, with its afferent and efferent pathways, it plays a key role in regulation of metabolic homeostasis through neuro endocrine – immune axis. Efferent cholinergic fibers are parasympathetic component of ANS. Parasympathetic side decreases alertness, blood pressure, heart rate which helps in attaining calmness, relaxation, digestion and results in defecation and urination. Other effects includes communication between gut and brain. The nerve fibers transmit information from the gut to brain linked with anxiety, stress and fear. The stimulation of vagal afferent fibers in gut influences brain system and plays crucial role in controlling mood and anxiety (psychiatric conditions). The afferent part is having communication between the enteric nervous system (ENS). ENS serves as intestinal barrier and regulates the major enteric processes, such as immune response, micro vascular circulation. Also it is in close contact to cells of the adaptive and innate immune system and regulate their functions and activities. Thus Vagus nerve has immunomodulatory properties too. Stimulation of vagus nerve also has significant anti-inflammatory activity. Increased efferent signals in the vagus nerve suppresses peripheral cytokine release. The inhibition of cytokine release is mediated through 3 pathways.

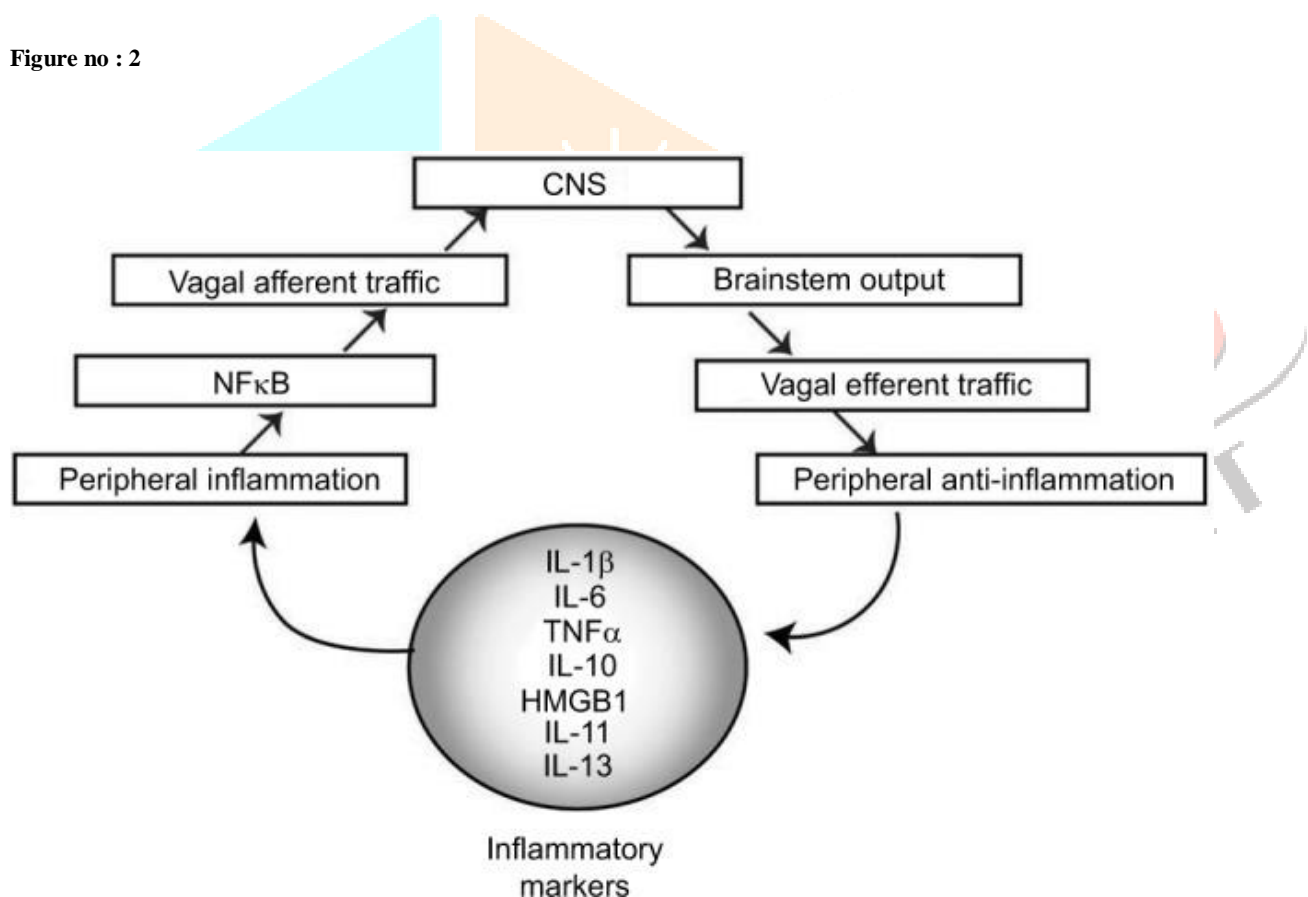
- 1) HPA axis - hypothalamic–pituitary–adrenal
- 2) Splenic sympathetic nerve
- 3) Cholinergic anti – inflammatory pathway

The Vagus Nerve is involved in the neuro-immune axis, both through its afferent and efferent fibers. It is a key component in the regulation of the HPA axis^{8,7}. It is capable of stimulating the (HPA) axis through its afferent fibers by releasing the glucocorticoids by the adrenal glands⁸ (7). Vagal afferents activate Nucleus tractus solitarius neurons which releases corticotrophin-releasing factor (CRF). CRF then induces the release of adrenocorticotrophic hormone by the pituitary to stimulate the release of glucocorticoids by the adrenal glands to inhibit peripheral inflammation. The vagus nerve is also involved in the cholinergic anti-inflammatory pathway (CAP) through a vago-vagal reflex involving a brainstem integrated communication between vagal afferent and efferent fibers^{9,10} (8, 9). Preliminary preclinical studies suggests that VNS may regulate the inflammatory response through activation of the cholinergic anti-inflammatory pathway (CAP), through the autonomic brain stem and forebrain cortical structures, and then

back through the descending vagus efferents. In recent years, studies demonstrated the role of VNS as an anti-inflammatory regulator primarily through altered regulation of acetylcholine¹¹⁻¹⁴₂₋₆ These findings provide strong evidence that stimulation of the vagus nerve plays a key role in peripheral cholinergic release and its role in suppressing inflammation. The CAP also affects the levels of acetylcholine through nicotinic acetylcholine receptors (nAChRs)¹¹⁻² The vagus nerve interact through a vago-sympathetic pathway involving vagal afferent fibers¹⁰ (10) and a vago-splenic pathway through vagal efferent fibers¹⁵(11). Consequently, the VN is at the crossroad of neuro-immune interactions

All these pathways cause release of norepinephrine which in turn will inhibit release of Tumour necrosis factor alpha by spleen macrophages. All these 3 pathways inhibit inflammatory signaling, thus stabilization of ongoing inflammatory process in envenomation gets controlled.¹⁶

Figure no : 2

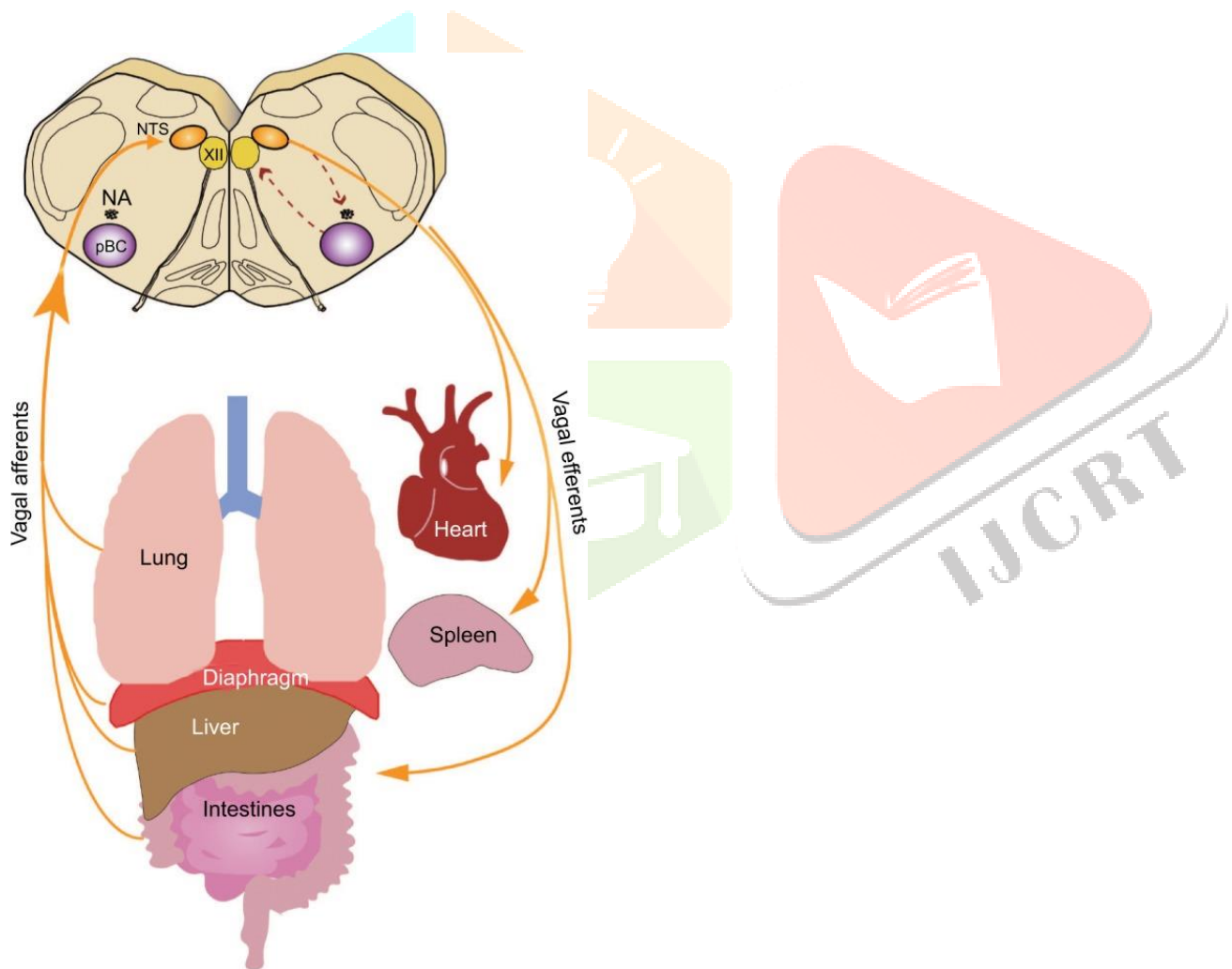


Importance of *moordha: karandaka marma*

It is believed (explained only in *keraliya visha granthas*) that if envenomation occurs, *jeeva* will take resort at *karandaka marma* which is situated in *moordha*. Here the procedure *uttu* utilizes the *moordha* and blowing at *moordha* might have stimulated the *jeeva*, who had taken last resort at *karandaka marma*.¹⁷

Application of gentle pressure ways at *moordha* signifies the proximity of meningeal vessels and may have facilitated the diffusion of aerosols of drug particles crossing blood brain barrier. The symptom lethargy is considered as an indication for this treatment procedure. This might be caused when venom has entered the brain tissue by crossing the blood brain barrier. Sudden heavy influx of inflammatory mediators will also contribute to this symptom. So the vagal stimulation caused by this procedure is thought to relieve the envenomation symptoms by controlling the inflammatory pathways through different mechanisms. Thus both neuromuscular junction stabilization and inflammatory mediator stabilization might have resulted in sudden relief of symptoms.

Figure no : 3



Importance of Drugs:

The drugs used for this treatment have *Ushna*, *teekshna* and *vishasamana* property. They are anti-inflammatory and nerve stimulant (*dusparsha*, *vishavega*). Chewing of these drugs and blowing procedure produces aerosol forms of these drug particles and facilitates their absorption. The middle layer of round window contains connective tissue layers which contains fibroblasts, fibrocytes, collagen, elastin, capillaries, myelinated and non myelinated nerves. Many studies have demonstrated trans-membrane drug transport through round window membrane and oval window through passive diffusion and facilitated diffusion through carriers. However absorption is purely dependent upon particle size and charge. A transendothelial – transmembrane drug transport can be expected in this procedure^{18,10}

Conclusion:

The procedure *Uttu* can be considered as a manual procedure inducing transcutaneous Vagus nerve stimulation by giving a positive pressure through external ear. The possible pathways that can be postulated includes, Neuromuscular junction stabilization, stabilization of inflammatory mediators (through vagus nerve stimulation) and direct drug delivery through tympanic membrane, meningeal vessels.

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