

## GENERAL PRINCIPLES OF TREATMENT OF POISONING IN AYURVEDA AND MODERN MEDICINE: A CONCEPTUAL STUDY

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### ABSTRACT

*Ayurveda* is an ancient science in Indian system of medicine. The foundation of *Ayurveda* is based on eight clinical branches (*Ashtang Ayurveda*). Among these branches *Agadtantra* is one of the clinical branch in which treatment of various poison is described. A general principle of treatment of poisoning is explained in *Ayurvedic Samhitas* like *Charaka*, *Sushruta* and *Vagbhata*. In *Charaka samhita* twenty four *Visha Upakrama* is mentioned which can be used as general principles of treatment of poisoning. In Modern Medicine general principles of treatment of poisoning is mentioned in the Toxicology. These basic principles are Resuscitation, removal of unabsorbed poison, use of antidotes, elimination of absorbed poison, symptomatic treatment and general health of patient. When we compare both *Ayurveda* and Modern Medicine with respect to this aspect, we find that all these principles which are suggested by modern medicine are already described in *Ayurvedic Samhitas* before thousands of year. Only the change in modern medicine is with the use of drugs, routes of their administration and latest science techniques. Hence this is an effort to put forward time tested basic principles of *Ayurveda* in comparison with modern medicine so that we can empower *Ayurveda* as immortal Science.

**KeyWords:** *Ayurveda*, Poisoning, Treatment, Modern medicine, General Principles.

### INTRODUCTION

*Ayurveda* is an immortal science which is a god's gift to Human being. The two main objective of this science is to maintain the health of healthy person and to cure the person who is suffering from disease. The foundation of *Ayurveda* is based on eight clinical branches (*Ashtangayurved*). Among these branches *Agadtantra* is one branch in which treatment of various poisoning is described. A general principle of treatment of poisoning is mentioned in *Brihatrayee* like *Charaka*, *Sushruta* & *Vagbhat*. In *Charaka samhita* twenty four modalities of treatment of poisoning are explained which can be used as general principles of treatment of poison-

ing in *sthavara* & *Jangama visha*. Also in modern medicine general principles of treatment of poisoning is explained in different Toxicology textbooks. Hence conceptual study of both *Ayurveda* & Modern medicine is done.

### AIMS & OBJECTS

1. To study general principles of treatment of poisoning in *Ayurveda* with special reference to *Chaturvimshati Upakrama* (Twenty four modalities) of *Charaka*.
2. To study general principles of treatment of poisoning in modern medicine.
3. Draw a conclusion from the study.

### REVIEW OF LITERATURE IN AYURVEDA

A general principle of treatment of poisoning is explained in *Charaka samhita*, *Sushruta samhita*, *Ashtanga Sangraha* & *Ashtanga Hridaya* in the form of *Vishavega*- their manifestation and treatment. *Charaka samhita* has mentioned manifestation and treatment of *Sthavara visha* (Inanimate poison) *vega* and *Jangama visha* (animate poison) *vega* commonly together. But *Sushruta samhita*, *AshtangSangraha* and *Ashtang Hridaya* describes *sthavara visha vega* its manifestation and treatment at one place and *Jangama visha vega* its manifestation and treatment in *sarpavisha* (snake poison). *Charaka samhita* has explained *Chaturvimshati Upakrama* (Twenty four modalities) of treatment of poisoning which is also used in different *visha vega* and its treatment. So these twenty four modalities of treatment of poisoning described in *Charaka* can be used as unique immortal principles of *Ayurveda* and they are as follows:

1. *Mantra* (Hymn): *Mantra chikitsa* is most effective treatment in *Jangama visha* (animate poison) specially snake bites. *Mantra chikitsa* should be practiced by individual who abstaining from women, meat & wine. Person should take little food, maintain hygiene of body & should sleep on mattress made with *kusha* grass.<sup>1</sup> By use of *mantra* with *arishtabandhana* spread of poison is blocked and patients life is saved.<sup>2</sup>
2. *Arishta/Venikabandhana* (Tourniquet Ligature): The spread of venom on limbs is arrested by application of tourniquet ligature four fingers above the site of bite with the help of cloth or bark of tree or any other soft material.<sup>3</sup> *Arishta* means manifestation which indicates death. So before *arishta* manifestation, *arishta* or *venikabandhana* is done with or without

*mantra* chanting to stop spreading of venom.<sup>4</sup> Ligature material should not be tied so tight or so loose. Very tight ligature material can produce necrosis or swelling & very loose material can't stop spreading of venom in body. As water is obstructed by dam, poison is obstructed by *arishta bandhana*.<sup>5</sup>

3. *Utkartana* (Incision): In this method incision is taken at the site of bite avoiding *marmas* (vital points) & joints to remove unabsorbed poison from the site of bite. As tree does not grow after cutting its root, poison also does not spread after incision of site of bite.<sup>6</sup>

4. *Nishpeedanam* (Compression): Poison is removed by squeezing the area of bite where incision is not advisable. This method helps in removing poison from body just like destroying of seed before sprouting. *Nishpeedan* is not done at vital parts & joints. If it is done at vital parts it may leads to death & if it is done at joints it leads to distortion.<sup>7</sup>

5. *Chushana* (Suction): Physicians mouth is filled with dry sand, ash or dried powder of cow dung or *agada* (medicine) and he is directed to suck venom by using lip along with blood through an incision made below the *arishtabandhan* on the site of bite. This method is specially adopted for fleshy parts.<sup>8</sup>

6. *Agnikarma* (Cauterization/burning): Except *Mandali* snake bite all other snake bites should be burnt by heated rods of gold, iron etc.<sup>9</sup>

7. *Parisheka* (Sprinkling): *Sushruta* has described *Parisheka* after *Raktamokshan* in poisonous condition. In snake bite affected part or organ can be irrigated by water medicated with *chandana* & *usheer*.<sup>10</sup> Contact or local poisons are also

washed with cold/ Luke warm / medicated water.

8. *Avagahana* (Immersion bath): *Avagahan* means immersion or dipping of the affected part or whole body in a medicated decoction.

9. *Raktamokshan* (Bloodletting): As air blows the fire, blood is the major media which blow up poison.<sup>11</sup> Hence blood-letting eliminates the poison from blood and minimizes the manifestation of poison. Bloodletting should be done immediately in case where poisoned area becomes discolored, rigid, swollen & painful.<sup>12</sup> if poison is not removed from blood, it spread throughout body and causes death. Hence if poison is spread in the body, *siravedha* (venesection) should be done.<sup>13</sup> *Raktamokshan* (*Siravedh*) is contraindicated in pregnancy, children and old age person.<sup>14</sup> *Siravedh* at the site of bite or bloodletting by cutting the veins at extremities & forehead is effective in removing toxic blood from system. Due to this reason blood-letting is the topmost treatment in toxicity manifestation of poisons.<sup>15</sup>

10. *Vamana* (Emesis): During first *vega*(phase) ingested poison should be eliminated by emesis which means if the poison is in the stomach, emesis is indicated. In first and second *vega* (phase) of *Sthavara* (inanimate) poison, emesis is indicated.<sup>16</sup> In cold season, in presence of secretion of cold saliva, when predominant increase in *kapha* and when patient is of *shleshma* constitution, induction of emesis is to be done by administration of emetics.<sup>17</sup> Emesis is induced in *Dooshivisha* (Latent poison) & *Garavisha* (concocted poison).<sup>18</sup> In *Darveekar sarpadamsha* emesis is indicated in 2nd 4th 5th 6th *vega*(phase).<sup>19</sup> In *mandali sarpadamsha* emesis is induced in 3rd *vega* (phase).<sup>20</sup> In

*Rajimana sarpadamsha* emesis indicated in 2nd 4th & 5th *vega* (phase).<sup>21</sup>

11. *Virechana* (Purgation): In second *vega*(phase) of *Sthavara visha*(Inanimate poison) purgation is done.<sup>22</sup> Purgatives are indicated when patient suffers from burning sensation and pain in *Koshtha* (abdomen), *Aadhman* (distention of abdomen), retention of urine-stool-flatulus, dysuria and deranged *pitta*.<sup>23</sup> In *dooshivisha* purgation is indicated.<sup>24</sup> *Vagbhata* describes that *Virechana* requires in person of *pitta* constitution, bitten by snake of *pitta* predominant features, having bite below umbilicus & if *pitta* is localized in the *pakwashaya* .<sup>25</sup>

12. *Upadhana*: The path of *kapha* is vitiated by poison and causes obstruction in the channels. Due to this movement of *vata* get obstructed and patient breath like he is going to die soon. During this stage incision should be made on scalp of patient resembling crow's leg and paste of *Charmaksha* (*Picrorhiza kuruo*) or meat of goat, cow, buffalo or cock with blood in one *bilva* quantity should be applied on incised area. After this nasal medication with fine powders of the following mixture like *Katabhi* (*Jyotishmati*), *Katuka* (*Marich*) and *Kayaphala* is given.<sup>26</sup>

13. *Hridayavarana* (Protection of heart): Poison deranges *kapha*, *pitta*, *vata* including their *ashayas* (reservoirs) and then occupy heart. From heart it spreads all over body causing death of patient. Hence heart is primarily protected by consuming *Madhu* (Honey), Ghee, *Majja*, Milk, *Gairik*, *Gomaya rasa*, *Ikshu rasa*, *Kakand* (*Diospyros malabarica*) juice, Blood of goat & other animal, ash mixed with water & soil mixed with water.<sup>27</sup> Poison by its penetrating property weakens the heart so in order to protect it, the patient should

give pure ghee, ghee mixed with honey or anti poisonous drugs added with ghee. Also *majja*, *Gomaya rasa*, ash or soil mixed with water is given.<sup>28</sup> Properties of poison and properties of ghee are exactly opposite. Hence administration of ghee immediately after poisoning or animal bite slows down the spread of poison and we get more time for treatment. This principle is known as *Hridayavarana*.

14. *Anjana* (Collyrium): *Anjana* is indicated in poisoning when eyes are edematous, patient feels sleepy, in discoloration of eye & in blurred vision.<sup>29</sup> *Pippali*, *Marich*, *Yavakshara*, *Vacha*, *sandhav* & *shigru* macerated with bile of *rohita* fish & applied as Collyrium which helps to destroy poison present in the eye.<sup>30</sup> After the use of strong nasal drops & collyrium ghee should be drunk in large quantity because poison by its penetrating property destroys the eye.

15. *Nasya* (Nasal medication): Due to poisoning if obstruction occurs at nose, eye, ear, tongue & throat then nasal medication is given in which fine powder of *Brihatkantakari*, *Beejpur*, *Jyotishmati* etc is used.<sup>31</sup> When effect of poison is seen in head then nasal medication is given with juice of *Bandhujiva*, *Bharangi*, and black-tulsi or powder of *pippali*, *hingu*, *vrishikali*, *Manashila*, *Shirishbeej*, *Aparmarga lavan*.<sup>32</sup>

16. *Dhuma* (Medicated fumigation): *Taagar*, *Kushtha*, Head of *Bhujang* snake & *shirish* flower is mixed with ghee and *Dhumaagad* is prepared. It is used for medicated fumigation to alleviate all types of poison & swelling due to poisoning. Medicated fumigation of *Laksha*, *Khas*, *Tejpatra*, *Guggul*, *Bhallataka*, *Arjunpushpa*, *Sarjarasa* & *Shweta aparajita* in same quantity helps in destruction of snake, rat, insects & worms in cloth.<sup>33</sup>

17. *Leha* (Linctus): Dryness of throat and mouth is common in poisoning. In such condition immediate medication should be administered to avoid adverse effect of poison. But it should be in palatable easily digested form. So *lehya* (linctus) are preferred as *Anupana* and for this purpose Honey and Ghee are used separately or in mixed form with medicine as *Anupana*.

18. *Oushadha* (Medicine): All the medicine which is used internally in the treatment and complications of poisoning can be included under this modulate such as *AjitAgad*, *Ksharaagad*, *Mahagandhahastinamagad* etc.

19. *Prashamana* (Suppressive drugs & procedure): Complications like *Mada*, *Murcha*, *Vishada*, *Hridrava* are relieved by cold procedure like blowing of air with the help of fan until poisonous person doesn't show straightening of body hairs.<sup>34</sup> *Kshiri* plant like *Vat* is used to stop excess bloodletting.<sup>35</sup> *Hinga* & *Pippali churna* is given with honey & sugar or *Kapithaswaras* & *Lavana* is given with honey & sugar to stop complications like *jwar*, *hikka*, *shwas*, *kasa* etc.<sup>36</sup>

20. *Pratisarana* (Rubbing of medicated powder): If proper blood is not coming through bloodletting, rubbing of fine powders of *Sunthi*, *Maricha*, *Pippli*, *Gradhuma*, *Haridra*, *Panchlavana*, *Brihatkantakari* is done.

21. *Prativisha* (Antidotes): In the seventh *vega* of *visha* if inanimate poisoning is occurred, person should be bitten by venomous animals and if bite of venomous animal is occurred he should give inanimate poison as a part of treatment.<sup>38</sup> When effect of poison does not subside by *mantra* & *oushadha chikitsa* then after fifth *vega* & before 7th *vega Prativisha* should be administered. *Sthira visha* generally pos-

possess properties similar with *kapha* and spreads upward while *jangama visha* possess properties of *pitta* & spreads downward. Thus two kinds of poison possessing opposite qualities when put together destroy each other hence patient bitten by venomous animal should administered poisonous root in the form of internal & external application. And person who consumed poison should be bitten by snake under supervision of clever physician. Thus poison is best antidote to neutralize the effect of poison.<sup>39</sup>

22. *Sadnyasthapan*(Resuscitation): In sixth *vega* of poison *Sadnyasthapan* medicine that is *Gopitta*, *Haridara*, *Manjishtha*, *Maricha*, *Pimpali* in same quantity given with water.<sup>40</sup> We can also use *Teekshna dravya nasya*, *Upadhana karma* & *Siravedha* as part of resuscitation treatment.

23. *Lepa* (Pastes): *Gandhahastinamagad* is used for *lepa* (local application) to destroy effect of *Vishadagdha*, *Kshata*, *Leedh*, *dashta*, *peeta visha vega*.<sup>41</sup>

24. *MritasanjivanaAgad*: *Sprikka*, *Plava*, *Sihouneya* etc. are taken in same quantity & in fine powder form to prepare pill named *Mritasanjivanaagad*. *Mritsanjivanaagad* is used in all types of poisoning in the form of *Nasya*, *Lepa*, *Dharana*, *Dhumagrahan* etc.<sup>42</sup>

## REVIEW OF LITERATURE IN MODERN MEDICINE

Toxicology is the science which deals with poisons with reference to their sources, properties, mode of action, symptoms which they produce, lethal dose, and nature of fatal results, treatment, methods of their detection & estimation and autopsy finding.<sup>43</sup>

In modern medicine general principles of treatment of poisoning are as follows:

1. Resuscitation
2. Removal of unabsorbed poison
3. Use of Antidotes
4. Elimination of absorbed poison
5. Symptomatic Treatment
6. Maintenance of general health of patient.

1. Resuscitation: Immediate Resuscitative measures in comatose patients should be adopted to stabilize respiration, circulation and to correct CNS depression(A,B, C, & D of Resuscitation).(A) Airway: Opening up & cleaning up the airway(oral cavity, nostrils) of secretion, vomit or any other foreign body is lifesaving. (B) Breathing: Supplementation of oxygen therapy by Ventmask or through Endo tracheal tube should be administered.(C)I.V. Fluid administration may be life sustaining.(D)Depression of CNS: It is corrected by giving drugs to stimulate CNS.<sup>44</sup>

2. Removal of unabsorbed poison: Removal of unabsorbed poison depends upon route of administration of poison. (A)Inhaled poison- If the poison eg, Carbon monoxide, automobile exhaust or gas from sewer has inhaled, the patient should be removed to fresh air and artificial respiration commenced at once. (B) Injected poisons (example hypnotic, insulin, snake bite, insect bite etc.)- (i) a tight Tourniquet should be applied proximal to the point of injection, It must be released every 10 minutes for 1 minute to prevent gangrene.(ii) The wound may be excised and poison removed by suction and/or neutralized chemically(C)Contact poisons- If the poison be spilled or sprayed on skin, eye or wound or be inserted into vagina, rectum or urinary bladder, the best way to treat it is to wash it out with plain warm water and/or to neutralize it by a suitable antidote. (D)Ingested poisons- The object

is to remove from the stomach as soon as and as much of the poison as possible. For this purpose (i) Vomiting (Emesis) may be induced by giving household emetics such as one tablespoonful of mustard powder (15gm) or two tablespoonful common salt in a tumblerful (200ml) of tepid water or 1-2 gm of Ipecac powder or 30 ml of Ipecac syrup or Apomorphine 6mg by subcutaneous injection followed by Naloxane hydrochloride (Narcan) 5-10 mg I.M or I.V., to counteract its narcotic effects may be used. (ii) Gastric lavage (stomach washing) is done with the help of stomach tube in adults and Ryle's tube or a number of 8 to 12 French rubber catheter in children to remove unabsorbed poison.<sup>45</sup>

3. Use of Antidote: Antidotes is remedies which counteract or neutralize the effect of poisons without causing appreciable harm to the body. They can be classified in to four groups, in accordance with their mode of action, namely: (1) mechanical or physical (2) chemical (3) physiological or pharmacological, and (4) universal.<sup>46</sup>

4. Elimination of absorbed poison: If time passed since ingestion of poison is more than six hours then poison may passed beyond stomach and its considerable absorption in the intestine and blood stream is occurred. In such condition for elimination of absorbed poison following procedures are done- (i) Renal Excretion- It may be improved by giving large amount of fluid, tea or lemonade orally. (ii) Purgation- 30 gm of sodium sulphate with large amount of water, hastens the elimination of poison in the stool.(iii)Diaphoretics- In most cases, it is doubtful that whether this speeds up the excretion of toxic agents. In most cases application of heat (Blanket hot water bottles) & administration hot beverages (hot tea, hot milk, hot lemonade) will

cause increased perspiration. Profuse perspiration will be produced by giving 5mg of Pilocarpine nitrate subcutaneous.<sup>47</sup> (IV)

Peritoneal Dialysis- It has been used in salicylate poisoning in children and may have place in those centers not yet possessing artificial kidney. (v) Haemodialysis- It has been employed for removing barbiturates, boric acid, glutethimide, methyl alcohol, salicylates and thiocyanates from blood. (vi) Haemoperfusion- It is superior to haemodialysis for removal of lipid soluble drugs. (vii) Exchange transfusion- It is only feasible with small children and has been applied to poisoning by salicylates, barbiturates, iron salts, carbon monoxide etc. (viii) Whole bowel irrigation- A new alternative to lavage, dialysis and haemoperfusion is whole bowel irrigation. The technique is promising; however patient has to be carefully monitored throughout the procedure.<sup>48</sup>

5. Symptomatic treatment: The treatment of symptoms should be applied as indications arise. Morphine should be given for pain, oxygen or artificial respiration for respiratory failure, cardiac stimulants for failing circulation, and an anesthetic barbiturates or diazepam for convulsions. Saline infusion may be useful to counteract dehydration as well as to enhance diuresis to excrete toxic substances.<sup>49</sup>

6. Maintenance of general health of patient: The patient should be kept warm and comfortable. Once the struggle to preserve life has been won, one of the main dangers to the patient is the subsequent development of respiratory tract infection. To avoid this risk prophylactic administration of antibiotics to all cases is desirable. If there is attempt of suicide, consult the psychologist for supportive psychotherapy or counseling.<sup>50</sup>

## DISCUSSION

When we compare both *Ayurveda* and Modern Medicine with respect to basic principles of treatment of poisoning, we find that all these principles which are suggested by modern medicine are already described in *Ayurvedic Samhitas* before thousands of year.

General principles of treatment of poisoning in modern medicine includes following 24 modalities from *Charaka Samhita*-

- 1) Resuscitation- In A,B,C,D of resuscitation we can include following modalities from *Charaka*  
A & B- *Dhuma & Nasya*  
C- *Hridayawarana*  
D- *Sadnyasthapan, Nasya, Upadhana, Siravedh, Mritsanjivanagad*
- 2) Removal of unabsorbed poison- In this principle we can include following modalities which are already described by *Charaka*
  - i) Injected-*Arishtabandhana, Utkartan, Nishpeedan, Chushana, Raktamokshana*
  - ii) Inhaled- *Dhuma*
  - iii) Contact- *Parisheka*
  - iv) Ingested- *Vamana*
- 3) Use of Antidotes- It can includes modalities from *Charaka* like *Prativisha, Oushadha, Agada*
- 4) Elimination of Absorbed poison- It includes modalities from *Charaka* like *Virechana*.
- 5) Symptomatic treatment- *Anjana, Nasya, Dhuma, Leha, Oushadha* from modalities of *Charaka* can be included in symptomatic treatment.
- 6) Maintenance of general health of patient- *Prashamana* can be included in this principle.

## CONCLUSION

We can conclude that the principles of treatment of poisoning which is suggested by both *Ayurveda* and Modern medicine are nearly same only the difference which we can see is the change in use of drugs, routes of their administration and latest science techniques. Further clinical trials & animal experimentation in this regard are necessary to prove these time tested basic principles of *Ayurveda* and also to empower the *Ayurveda* as immortal Science.

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