PIJAR
Paryeshana International Journal of Ayuredic Reserach
www.pijar.org
ISSN:2456:4354

CONCEPT OF STERILIZATION IN AYURVEDA

DR. CHAKRABORTY SAYANTAN[1], DR. NAIKAR ASHOK[2]

[1]2nd year PG scholar,, [2] Associate professor

Dept. of shalya tantra, N.K.J Ayurvedic Medical College & PG center, Bidar

Abstract :

Sterilization is a procedure by which freeing a surface or medium from all microorganism by removing or killing them. In Ayurveda it comes under the heading of Raksha karma, as stated by various Acharyas. For surgeons secondary infection is a big headache which comes from instruments, operation theaters, body surface etc. Now a days in modern era there is various chemical and physical methods of sterilization. But the concept of ancient sterilization could be cost effective, having less side effect and may have medicinal values also. The ancient Acharyas used agni (fire), kwath (decoction), sunlight and various medicated fumigating yogas to protect Atura from different organisms. So an effort is made to establish an Ayurvedic sterilization technique in this era.

Keywords: Sterilization, Raksha karma, Ayurveda, Organisms

Introduction

The air around us is filled with millions of microorganisms (bacteria, fungi, protozoa, virus). The number of microorganisms in air range from 10-10000 / cubic meter. And they can live < -20 C to >100 C. But not all the microorganisms are pathogenic. About 20 – 25 % of all microbes are nonpathogenic.

In Ayurveda the term krimi is used in broader sense, it includes pathogenic and nonpathogenic organisms covering wide range of infection and infestation. They are explained under the title of Oupashargik roga which spread through different routes.

To get preventation from Krimi Rakshoghna vidhi is indicated in our classics.

Sterilization is a process by which freeing an article, a surface or a medium of all microorganism both in vegetative and in spores state by removing or killing them. There are two treatment principle Aushadha and Shastrakarma. It is true that Sushruta is the Father of Surgery, but with the help of advances in technology and bio-physics modern surgery is developed well and practiced widely.

But the basic is for any surgical treatment sterilization is a very important factor for success. Lack of sterilization leads to complication like infection and delayed wound healing.

In Ayurveda Sterilization (Rakshaghana vidhi) is not only used in case of shastra karma but also mentioned in case of vranitagara, sutikagara, kumaragara, for care of vrana etc.

In modern era sterilization procedure is done by heat, chemicals or radiation. The sterilization is done to sterilize instruments, operation theaters, patients ward, ICUs, the substance like catheters, tubes, drains, syringes, needles, pads, bandages, cotton etc.

In Ayurveda various measures are practiced for rakshoghana vidhi like kwath, dhupana, parisheka, agni tapana, sunlight etc. They are mentioned sporadically in various texts under the heading of various diseases, surgical procedures and health routine.

Some terminology:

Sterilization: A processes of freeing an article, a surface or a medium of all microorganisms both vegetative and in spore states by removing or killing them.[1]

Disinfection: Destruction of all pathogenic organisms capable of causing infection.[1]

Asepsis: It is a process to reduce or eliminate infection causing organisms from entering the environment of the patient.[2]

Antisepsis: A process of destruction of disease causing microorganisms to prevent infection in patient's body surface. It may be bactericidal or bacteriostatic.[2]

Method of Sterilization:

Firstly sterilization is done for preservation of food to reduce food

borne diseases. Josheph Lister was pioneer of antiseptic surgery. Aim of sterilization is to reduce initially present microorganism or other potential pathogens.

Degree of sterilization is expressed by multiple of the decimal reduction time or D-value (the time needed to reduce the initial number N_0 to 1/10th of its original value.

$N/N_0 = (10)^{-t/D}$

Various methods are used for sterilization like:-

Heat:

Dry

1. Hot air oven – in this procedure longer exposer to dry heat about 160 – 190^0 C for 6 – 12 min
2. Flaming – by Bunsen Burner or Alcohol lamp until it glows red.
3. Incineration – combustuion of organic substance contained in waste material.

Moist

1. Autoclave – 120^0 C at 20 psi for 60 min or 134^0 C for 18 min.
2. Tyndallization – simple boiling water method for 20 min.

Chemical:

In case of heat sensitive substance like fiber optics, electronic, plastic by Ethylene oxide, nitrogen dioxide, ozone, glutaraldehyde, formaldehyde, H_2O_2, peracetic acid (0.2%)

Radiation :

Non ionizing – UV light for plastic substance.

Ionizing – Gamma radiation by radio isotopes(cobalt-60, caesium-137), x-rays, electron beam.

Filtration:

Earthenware filter- It is made up of diatomaceous earth or porcelain.

Asbestos filter- It is made from chrysolite type of asbestos chemically composed of magnesium silicate.

Membrane filter- It is made up of polymeric materials like cellulose nitrate, cellulose diacetate, polyester.

Air filter: HEPA (high efficiency particle air) filter, it can remove particles <0.3 µm in diameter.[4]

In Ayurveda Rakshoghana vidhi is a very big entity that includes various ancients sterilization procedures by various acharyas and which are practiced till now in a day to day life like during making of house good vitalization system as well as good sunlight and practicing HOMA

during Puja are few examples which are inherited from our ancestors.

As the water and air borne diseases are more in ancient time they have given more importance to it. Regarding air and water purification Charaka gave detail measures in Viman Sthana Janapadodhvamsa chapter.

Air purification is done by various dhupana karmas with laksha (*Ficus laccur*), haridra, ativisha (*Aconitum heterophyllum*), haritaki(*Terminalia chibula),* kustha *(Sassuria lappa*), valaka *(Cinnamom tamala*), ela, mustak (*Cyprus rotundus*), priyangu. Some other drugs are used to purify air like guggula. Somraji (*Psoralia corlifolia*), agaru, nimba etc.

Regarding water purification Hamsodaka is stated by charaka. Hamsa stands for sun and moon. The water which is purified by rays of sun and moon is called Hamsodaka. According to sushruta water is purified by two ways Marjana and prasadana. If highly polluted then the water should be boiled, if pollution is less then it should exposed to sun light, if pollution is medium then red hot iron ball or sand is put into water.

Some drugs are used to purify water like kataka(*Strichnus potatorum*), bisa granthi,saibal moola, mukta, chandrakanta mani, gomedaka etc.[5]

Regarding purification of sutika gara, kumaragara, vranita gara criterias are as follows They should devoid of direct light air or light. But proper ventilation should be maintained. It should also devoid of dust, smoke.

Various types of dhupan yogas are used to purify the room :

- Sarshap, mimba, ghrita, lavana are used to fumigate the room twice daily for 10 days[5]
- Hingu, nimba, guggula, akshata(*oryza sativa*)
- Honey, body hair of goat, horn of sheep.

These dhupan yogas are used for vrana dhupan, fumigation of clothes, room, vrana bandhan dravyas etc to purify vrana from visa(harmful substance).

For vrana:

Dhupan is indicated to purify vrana by rakshoghna dhupa like

- Guggula, aguru, raal, vacha, swet sarsap.
- Lavan(saindhav), Nimba patra, ghrita7

For vrana prakshalana:

Various kashaya are used to purify vrana like Panchavalkal kashaya, tripala kashaya, surasadi gana kashaya, araghvadi kashaya, old ghrita etc

For shastra karma:

Importance of sterilization of shastra pirior to shastra karma is mentioned by Sushruta. Incision is taken after proper heating of shastra, otherwise paka(pus formation) takes place.

अग्नि तप्तेन शस्त्रेण च्छिन्दयात् अन्यथा अतप्तेन पाकभय स्यात II (su, chi-2/46)

Discussion:

Acharya Sushruta includes raksha karma in the heading of sasti upakramas to protect atura from 'nishachara'(invisible creatures).

निशाचरेभ्यो रक्ष्यस्तु नित्यमेव क्षतातुरः I रक्षाविधानैरुद्दिष्टर्यमैः सनियमैस्तथा II (su. Chi-1/133)

In Ayurveda there are various way like dhupan(fumigation), prakshalana, agni tapan etc. to sterililize vranitagara, kumaragara, sutikagara, kumaragara, shastra(instruments), vrana etc which could be cost effective, having less side effect and may have medicinal value.

But they are not practiced vigorously due to lack of clarity to the parameters regarding their application.

Conclusion:

It is necessary to have more detailed and systematic evaluation of drugs mentioned under the process of rakshoghna vidhi(sterilization).

References:

1) Patel Mukesh B, Upadhyay Yogesh P, Ward Procedure, Elsevier, 6th edition,chapter-1,p.p-1
2) Patel Mukesh B, Upadhyay Yogesh P, Ward Procedure, Elsevier, 6th edition,chapter-1,p.p-14
3) https://en.wikipedia.org/wiki/Sterilization_(microbiology)
4) https://www.microrao.com/micronotes/sterilization.pdf
5) Kabiraj Dattashastri Ambika, Sushruta samhita, sutra sthana, part-I, Chaukhambha Sanskrit sansthan, Varanasi, Reprint 2009, chapter-45,p.p-219 .
6) Kabiraj Dattashastri Ambika, Sushruta samhita, sutra sthana, part-I,

Chaukhambha Sanskrit sansthan, Varanasi, Reprint 2009, chapter-19, p.p-105.

7) Kabiraj Dattashastri Ambika, Sushruta samhita, sutra sthana, part-I, Chaukhambha Sanskrit sansthan, Varanasi, Reprint 2009, chapter-5, p.p-2

CORRESPONDING AUTHOR:

DR. CHAKRABORTY SAYANTAN

2nd year PG scholar,Dept. of shalya tantra,

N.K.J Ayurvedic Medical College & PG center Bidar

Email:s.chakraborty8287@gmail.com

Source of Support: NIL
Conflict of Interest : None declared