INFLAMMATION IN Ayurveda AND MODERN MEDICINE

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ABSTRACT

Inflammation in Ayurveda is known by different names in different contexts namely Shotha, Shopha, Svatyu, Utsedha and Samhata. Chronic inflammation is a cardinal sign of chronic degenerative disorders. Inflammation and oedema associated with it is duly recognised in Ayurveda as a pathological manifestation. While modern medicine considers inflammation as a symptom or rather as a healing response of the body in wounds, Ayurveda treats the concept of inflammation as (a) symptom of a disease (b) an independent disease and (c) a complication of diseases. Degenerative diseases share a common pathological feature of inflammation. The disturbances in micro channel circulation in inflammation are due to Sroto dushti (clogging of channels) by Aama (toxic waste of metabolism). Preventing Aama formation could hold the key to preventing chronic degenerative disorders. The paper deals with the concept of understanding inflammation in Ayurveda and Modern medicine.

Keywords: Aama, degenerative diseases, inflammation, Shopha, Srotodushti

INTRODUCTION

Indian traditional system of medicine, Ayurveda encompasses all aspects of living-health and sickness. Like other pathological conditions inflammation has been documented in the Brihat Trayee, the Charaka Samhita, the Susruta Samhita and Astanga Samgraha between 1500 BC and 600 AD1. Madhava Nidana, in around 700 AD2, a complete book on pathogenesis in Ayurveda is influenced by all the three books in its description of inflammation.

Inflammation and the oedema associated with it have got the attention due to it in Ayurveda as a pathological manifestation. It is known by different names in different contexts namely Shotha3 and Shophā4. Svatyu, Utsedha and Samhata are the other terms used in Ayurveda. It is characterised by elevation, oedema, heaviness and pain. Inflammation has been dealt with as a disease, as a symptom and also as a complication of diseases.

From the time Celsus (30BC-38 AD) characterized inflammation by its four cardinal signs rubor (redness) calor (increased heat), tumor (swelling) and dolor (pain) and the fifth sign function laesa (loss of function) was added by Virchow in the 19th Century modern science has come a long way5. Today inflammation has been recognised as a healing response of the body in the acute stage. In response to cell injury due to trauma or infection, a complex network of molecular and cellular interactions is directed as a means to return to homeostasis mediated by cytokines6. If tissue health is not restored, inflammation becomes a chronic condition that damages the surrounding tissue7.

This paper seeks to present the Ayurvedic perspective on chronic inflammation in the light of path breaking
research on this aspect in modern science and exploring the relationship between inflammation and degenerative disorders as described in Ayurveda literature.

**METHOD**

The research is purely a literary one. Major Ayurveda texts, Charaka, Susruta and Ashtanga Samgraha were referred to for the different names associated with inflammation and a possible correlation was attempted with the subject of inflammation in Robins and Cotran’s Pathologic basis of Diseases. Shotha or any other symptoms mentioned frequently with degenerative disorders were noted.

**The backdrop**

Chronic inflammation is a cardinal sign of chronic degenerative disorders. A low grade chronic inflammation is also the symptom of most aging diseases. Aging and degenerative disorders go hand in hand. It is alarming that an increasing number of young people are being diagnosed with disorders that were hither considered the bane of the elderly. Most of the age related diseases such as Arthritis, Diabetes, Osteoporosis, Atherosclerosis, Parkinson’s disease and Alzheimer’s disease are underlined by chronic inflammation. This has been suggested by increased serum levels of inflammatory mediators like cytokine levels in the subjects. Studies have also proved that aging is accompanied by a 2-4 fold increase in the levels of cytokines.

Chronic inflammation precedes most cancers. Rudolf Virchow the German physician in the 19th century suggested a link between inflammation and cancer, cardiovascular diseases, diabetes and other chronic diseases. Indeed, in recent years his observations have been confirmed and a molecular basis of most chronic diseases and the associated inflammation has been identified.

**Ayurveda and inflammation**

A revisit to Ayurveda classics points to the understanding of inflammation as a vascular and cellular reaction. Vitiation in the channels of microcirculation or Srotodushti as it is envisaged in Ayurveda leads to (a) Excessive functioning (b) Obstruction or inadequate activity (c) Tumour or new growths (d) Movements in unnatural directions.

The first inflammatory response is usually increased activity (due to vascularity) in the form of excessive exudates and protein release into the extra cellular matrix. Then there is obstruction leading to change in the rate of diffusion of nutrients, oxygen and wastes. The hampered diffusion leads to tumours, benign or malignant. Movement in unusual direction may be due to reverse osmosis as a result of electrolyte differences. All the clogging of the micro channels has been attributed to Aama, the toxic by-product of improper digestion. Aama is considered the pro inflammatory waste and the chief contributor to Srotodushti.

It is interesting to note that there have been suggestions to quantify and qualify Aama according to its description in Ayurveda. That the Aama status of a person in a very personalized form of treatment could actually be regarded as a bio-marker for chronic inflammation leading to metabolic syndrome and cancer will perhaps pave the way for preventive oncology and prevention of lifestyle disorders. Here, it is also to be noted that Granthi or tumour formation is considered as a form of inflammation in Ayurveda.
The inflammatory response

Modern medicine classifies inflammation as (a) acute and (b) chronic (exceeding 3 weeks). Inflammation is the body’s response to trauma or infection and is in fact a healing process. The molecular and cellular interactions are directed to facilitate a return to physiologic homeostasis and tissue repair. The response is composed of both local events and a systemic activation mediated by Cytokines. If tissues health is not restored inflammation becomes chronic and continually damages host tissue.

Ayurvedic perspective

Ayurveda has considered inflammation as a pathologic condition that needs to be treated with anti inflammatory medication and addressing the underlying aetiology.

Inflammation as an independent disease: The classics have given extensive coverage to Shotha as a disease by dedicating entire chapters to the subject. The disease Shotha includes both Oedema and oedematous inflammation.

Classification as in Charaka Samhita

Shotha

- Ekanga (localised)
- Ardhanga (regional)
- Sarvanga (dropsy)

Shotha as an independent disease in Charaka Samhita

Inflammation associated with oedema has been treated as an independent disease in the Samhitas Charaka, Susruta and Astanga Sangraha. Shotha as a disease indicates oedematous condition with general symptoms of heaviness, instability, an elevation of heat, thinning of veins, discolouration.

Shotha

- Nija (intrinsic)
- Agantuja (exogenous)

Nija

- Vataja
- Pittaja
- Kaphaja

Agantuja

- Abhighata (Trauma)
- Bhallataka (Allergies)
- Pushpa Phala Rasam (Infection)
- Krimi (Toxicity)
- Visha (Burns)
- Dahana (Climatic changes)
- Sagaravata/ Himavata

The aetiology for exogenous inflammation is quite complete and proves the extent of knowledge of this pathological condition in India since at least three thousand years.
Cause of Nija Shotha or endogenous Oedema

As complications of vomiting, Cholera, breathing disorders, Cough, diarrhoea, anaemia, abdominal diseases, fevers, menorrhagia, fistula piles

Not undertaking Detoxification measures

In Skin diseases and infections due to microbes

Suppression of natural urges like vomiting sneezing eructation, urine, faeces, flatus, semen

Dietary reason, Consuming too much salt, eating in excess and eating unsuitable food

Sushruta samhita

Classification of Shotha in Sushruta varies slightly as he considered Raktaja Shopha (inflammation due to disorders in blood) and spoke of Vranashotha i.e. inflammation in wounds. This classification is justified from a surgeon’s point of view.

Shotha

Vataja
Painful like the prick of needles

Pittaja
Progresses quickly with burning sensation is yellowish

Kaphaja
Slow progressing with itching sensation

Rakthaja
Similar to Pittaja but there is darker discoloration

Sannipataja
Symptoms of all the doshas

Agantuja
Symptoms of Pittaja and Raktaja Shopa is reddish

Shotha as a complication of diseases

Charaka described 7 inflammatory swelling that arises as complications of uncontrolled diabetes Susruta and Vagbhatta listed these as ten. Charaka also spoke of inflammatory swellings occurring in the absence of Diabetes, but with obesity as a triggering factor. Inflammatory swellings such as Sharavika, Kacchapika, jālīnī, have been explained as difficult to treat in obese persons. Prognosis of inflammation has been linked to obesity. This establishes the awareness of the relationship between inflammation and metabolic disorders.

Charaka, Sushruta and Vagbhatta have considered Vidradhi or abscess as one of the 10 inflammatory swellings. This could occur externally (in the skin, muscle and ligament) and also internally (in vital organs).

Inflammation has been understood as a symptom of an abscess. The site for internal abscess with associated inflammation have been listed as heart (pericardial region included?) pharynx, liver, spleen, kidneys, bladder, pelvic and inguinal regions.

Neoplasia (granthi) has been considered a form of hard elevation occurring due to non resolving of oedematous inflammation.

Dietary (improper diet, eating too much salt) and lifestyle factors, suppression of natural urges were considered in Ayurveda as those favouring the formation of inflammation.

Mention is made of certain diseases like cough, diarrhoea, anaemia and abdominal diseases like enlarged liver enlarged spleen and peritonitis causing oedema/inflammation.

Krimi or infection is mentioned as an aetiological factor for inflammation but has not been dealt with in detail. Rather the aggravation of tridosha is considered
as Ayurveda follows the humoral theory of diseases.

Shotta has been mentioned as a complication of pandu (anemia)\(^{34}\). The general symptoms of inflammation are heaviness, instability, an elevation of temperature of veins and discoloration.

Table 1: Shotta as a symptom of disease

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sanskrit Name for the Disease</th>
<th>English Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Upajivihika (Charaka Sutra Sthana 18.19)</td>
<td>Glossitis</td>
</tr>
<tr>
<td>2.</td>
<td>Galashundi (Charaka Sutra Sthana 18.20)</td>
<td>Uvulitis</td>
</tr>
<tr>
<td>3.</td>
<td>Visarpa (Charaka Sutra Sthana 18.23)</td>
<td>Erysepalas</td>
</tr>
<tr>
<td>4.</td>
<td>Galagraha (Charaka Sutra Sthana 18.22)</td>
<td>Throat infections</td>
</tr>
<tr>
<td>5.</td>
<td>Galagand (Charaka Sutra Sthana 18.21)</td>
<td>Goitre</td>
</tr>
<tr>
<td>6.</td>
<td>Mruth bhakhana janya pandu (Ch Chi 16.28)</td>
<td>Anaemia that originates by eating mud</td>
</tr>
<tr>
<td>7.</td>
<td>Kumbha kamla (Charaka Chiktsa Sthana 16.38)</td>
<td>Hepatitis</td>
</tr>
<tr>
<td>8.</td>
<td>Sandhigatavata (Charaka Chiktsa Sthana 28.37)</td>
<td>Osteoarthritis</td>
</tr>
<tr>
<td>9.</td>
<td>Vatarakta (Charaka Chiktsa Sthana 29.21)</td>
<td>Gout</td>
</tr>
</tbody>
</table>

CONCLUSION

The exhaustive information of inflammation in the samhitas indicates a good level of understanding of the subject. Degenerative disorders like Diabetes, Atherosclerosis, Parkinson’s syndrome, Alzheimer disease, osteoarthritis and rheumatoid arthritis share a common pathological feature of inflammation\(^{35}\). Obesity, aging and metabolic syndrome is also characterized by a low grade chronic inflammation. Inflammation also precedes most cancers and is considered a hallmark of the neoplastic process\(^{36}\). Other than neuro-degenerative conditions Ayurveda too considers inflammation either as a cause, symptom or complication of degenerative conditions. Obesity has been considered a bad prognostic feature in persons with inflammatory conditions. Hence there is a kind of shared pathology between cancers and metabolic syndrome and the common pathway is inflammation due to disturbance in micro channel circulation or rather of diffusion. The obstruction of micro channels by Aama (toxic waste of metabolism) is responsible for loss of homeostasis, inflammation and tissue damage\(^{37}\). Accordingly Ayurveda believes that Aama is the root cause of metabolic and degenerative disease since it blocks Srotas or micro channels that nourish tissues. Aama is believed to have antigenic and pro inflammatory properties\(^{38}\). Emphasis is laid on purificatory procedures, Panchakarma or detoxification as it is called these days is for clearing clogged channels both gross and subtle. Considering this, the scope of Ayurveda in preventive oncology and prevention of degenerative diseases and metabolic disorders is yet to be appreciated.

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