STUDY OF IMPORTANCE OF KAKSHADHARA MARMA W. S. R TO ERB’S PALSY

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ABSTRACT

Ayurveda is one of the most reliable and complete medical science. The union of Mamsa, Sira, Snayu Asthi and Sandhi are called as Marma. Acharya Sushruta stated every aspect of Marma like definition, signs and symptoms of Marma injury. Total number of Marma as described in Samhitas are 107 in number. Marma science is one of the special aspects deeply elaborated by Ayurveda. Marma are several vital points on the body having importance regarding traumatic effect. These vital points when exposed to trauma generate the symptoms from pain to fatal effect. These points should be protected from injury. Detail knowledge of Marma is important from surgical point of view. Acharya Sushruta explain the Marma viddha lakshana in detail. Human body when expose to trauma shows various signs and symptoms depending on severity and type of trauma. when the trauma to the Kakshadhara Marma causes “Erb’s Palsy”. Erb’s palsy is the paralysis of the arm caused by injury to the upper trunk (c5–c6) of the brachial plexus. There are other ancient Indian sciences also in which the vital points of human body are described. The main aim of this study is to understand the kakshadhara Marma, its location in human body, its applied aspect and to find out any similarity with the vital points explain in Ayurveda classics.

KEYWORDS: Marma, Kakshadhara Marma, Pakshaghata, Erb’s palsy.

INTRODUCTION

The word Marma appeared in Vedic period in dictionaries, the word "Marma" means mortal spot, vulnerable point, weak or sensitive part of body, joint or articulation core of anything, vital structures[1]. Marma in Ayurvedic classics is illustrated as the vital points in human body. Marma vigyan was developed as science of war. There are so many references from Vedas regarding attack on Marma Sthana. Acharya Sushruta classified Marma as Mamsa Marma (Muscular vital points), Sira Marma (Vascular vital points), Snayu Marma (Ligaments vital point), Asthi Marma (Vital points of bone), and Sandhi Marma (Vital point of joints) [2]. The Marma are called vital points because they causes death and they are meeting point of Mansa (muscles), Asthi (bone), Snayu (tendon), Sira (veins), Sandhi (joints) and Prana[7]. They are indicated by the predominant structure found in them.

There are five types, Saddhya pranhar (Causing sudden death), Kalantar Pranahara (Causing death after some times), Vishyagdna (Type of Parinama), Vaikalyakara (Causing deformity) and Rujakara Marma (Causing pain)[3]. Marmas are the points where injury causes deformity. Kakshadhara Marma is one such vital region in human anatomy which falls under the above classification on the basis of structures involved. It is explained as one among the Snayu Marma. Totally there are 27 number of Snayu Marma[2]. Kakshadhareda and Vitap both are considered under Sira Marma by Acharya Vagbhata so he stated that Snayu Marma are 23 in number[7]. It is located between Kaksha (Axilla) and Aaksha (Collar bone). According to Amarkosha the meaning of Kaksha word is Bahumoola (origin of Bahu). An injury to Kakshadhara Marma result in deformity in bahu (arm), Pani (hand), and Anguli (fingers)[2]. Kakshadhara Marma is situated at the shoulder joint. Injury to armpit causes Erb’s palsy[12]. Erb’s palsy is a paralysis of arm caused by injury to the upper trunk (c5–c6) of the brachial plexus sustained during delivery[13]. This also affects the patients with impaired muscular, nervous and circulatory development.

Hence this study is aimed to analysis the anatomical structure of Kakshadhara Marma and its Viddha Lakshana (Injury effect). Present work is been taken up with an idea of updating early concept of a better understanding of Kakshadhara Marma in accordance with the modern and applied anatomy and also explore Viddhalakshan of Kakshadhara Marma in relation to Pakshaghata (Paralysis).

Material and Methods

1) Ayurvedic literature related to Kakshadhara Marma was studied from various sources like Brihat-trayee.
2) Modern literature related to shoulder joint is studied.
3) Modern literature related to brachial plexus is studied.
4) Modern literature related to Erb’s palsy.

Kakshadhara marma

Kakshadhara are devoid of Asthi, Sandhi and Sira. The word Kaksha means related with the armpit. The word Kakshadhara means the part of the body where the upper arm is connected with the trunk, i.e., the shoulder joint. Kaksha means the Bahu Moola. Which are two in number.
Kakshadhara Marma is situated between the region of arm and the breast. Injury to Kakshadhara Marma will be lead to Pakshaghatal, that is the paralysis of the one side. As per the description, Kakshadhara Marma sthana is lies in between the Kaksha and Vaksha but as the name indicates it is more related to Kaksha. It is situated in the region of the body where the upper arm is connected with the trunk. Any injury to this particular Marmasthana will lead to Pakshaghata, that is paralysis[2].

<table>
<thead>
<tr>
<th>Name</th>
<th>Kakshadhara Marma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>02</td>
</tr>
<tr>
<td>Site</td>
<td>At axilla</td>
</tr>
<tr>
<td>Type (acco. To Rachna (Structure involved))</td>
<td>Snayu</td>
</tr>
<tr>
<td>Type (acco. To Aghataj parinaam (Prognostic))</td>
<td>Vaikalyakara</td>
</tr>
<tr>
<td>Type (acco. To Parimaan (Dimensional))</td>
<td>01 Angula</td>
</tr>
</tbody>
</table>

Erb’s palsy - (erb-duchenne palsy)

Erb’s palsy is the paralysis of arm caused by injury to the brachial plexus specifically the upper trunk of brachial plexus. The deformity is known as “policeman’s tip hand” or “porter’s tip hand”[6]. At that point six nerves meet here C5-C6, suprascapular nerve, nerve to subclavius and anterior and posterior division of C5 - C6.

Causes
1) Dystosia- an abnormal and difficult child birth
2) Clavicle fracture
3) Trauma to head or shoulder
4) During anaesthesia

The brachial plexus is a network of nerves that originate in the neck region and branch off to form most of the other nerves that control movement and sensation in the upper limbs, including the shoulder, arm, forearm and hand. The radial, median and ulnar nerves originate in the brachial plexus. Palsy means weakness and brachial plexus birth palsy causes arm weakness and loss of motion.

Disability
The following movements are lost[8],
1) Abduction and lateral rotation of arm.
2) Flexion and supination of the forearm.
3) Bicep and supinator jerk are lost.
4) Sensations are lost over a small area.

Structure involved in Kakshadhara marma and erb’s palsy

<table>
<thead>
<tr>
<th>Structures</th>
<th>Kakshadhara Marma</th>
<th>Erb’s palsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscles</td>
<td>Pectoralis major, pectoralis minor, deltoid, coracobrachialis, biceps brachii, subscapularis, tacepius, supraspinatus, infra spinatus, teres major, teres minor, and triceps brachii.</td>
<td>Paralysis and atrophy of deltoide, biceps brachii, brachialis, brachiolepidialis, partly supraspinatus, infraspinatus and supinator.</td>
</tr>
<tr>
<td>Vessels</td>
<td>Axillary artery and Axillary vein.</td>
<td>Axillary artery and Axillary vein.</td>
</tr>
<tr>
<td>Nerves</td>
<td>Brachial plexus</td>
<td>Brachial plexus</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Ayaama, Akshepaka, Stambha, excessive Ruja in Snayus, Yanasthana Ashakthi and Vaikalyathath in Anga.</td>
<td>Pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of sensation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Muscle weakness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paralysis of some or all of the muscles of arm</td>
</tr>
</tbody>
</table>

Study of Kakshadhara Marma has been carried out by collecting references from different Ayurvedic literature and correlate it with modern anatomy text books and compare with Marma explained in Ayurvedic classics. The Kakshadhara Marma lies in the Kaksha (Axilla) region, the detail discussion of these points are as follows.

Location
As per the available references from the Samhitas, the exact location of Kakshadhara Marma is mentioned as between Kaksha (Axilla) and Vaksha (Chest) [5], that will be more related to Kaksha. The Kaksha region refers to root of the arm i.e., the joint which connects the arm to the shoulder known as Kaksha Sandhi. Vaksha is the region above the Hrudaya (Heart) and below the Kanta (Neck). It may be considered as the subclavicular region and the region above the breast. The word Dhara means bearing or holding, hence it is named as Kakshadhara, it is assumed that it holds the Kaksha region with the help of muscles and ligaments. So the location of the Marma is in between the chest and Kaksha Sandhi but nearer to the Kaksha Sandhi as the name indicates. Specifically, the Kakshadhara Marma Sthana is to be considered just below the clavicle nearer to the Kaksha Sandhi. The muscles, ligament, blood vessels and nerves in the subclavicular and brachial plexus region are related to the Kakshadhara Marma sthana.

Mamsa
Acharya Sushruta has described 10 Peshi (Muscles) in Kaksha region[3]. The subclavicular and
shoulder region has been dissected and observed the muscles and other structures. The following muscles were studied and identified;

- Pectoralis major, pectoralis minor, deltoid, coracobraclialis, biceps brachi, subscapularis, tapezius, supraspinatus, infra spinatus, teres major, teres minor, and triceps brachi. These 10 muscles may be correlated with the concept of Aachrya sushruta.

**Sira**

Acharya Sushruta explains that Siras (Vessels) are present in Marmas. They nourish the ligaments, bones, muscles and joints. The following blood vessels are observed in the Marmasthana;

- Superior thoracic artery, lateral thoracic artery, thoracoacromial artery, circumflex scapular artery, thoracodorsal artery, anterior and posterior circumflex humeral artery, axillary vein, brachial vein, cephalic vein, subclavian vein, suprascapular artery, superficial cervical artery. These blood vessels may be compared with the Siras present in Marmasthana[8].

**Nerves**

The following nerves were observed in the subclavicular and shoulder region related with Marma Sthana[9].

- Posterior subclavicular nerve, cutaneous branches from axillary nerve, cords of brachial plexus, axillary nerve, medial and lateral pectoral nerve, median nerve.

**Snayu**

According to modern explanation the following ligaments are found during dissection[8].

- Superior, middle and inferior gleno humoral ligament, coracoacromial ligament, capsular ligament, acromioclavicular ligament, transverse humoral ligament. The fascia that has been observed are the deep fascia covering the deltoid, subscapular fascia, clavicular fascia. Since Snayus does the Anga Bandhans, these ligaments may be compared with Snayu in Marmasthana.

**Asthi and Sandhi**

Acharya Sushruta said that one Asthi is present in the Bahu and two in the Amsa phalaka (Scapula) [8]. These results in Kaksha sandhi (Shoulder joint). It is a form of Ulukhalsandhi. As per the modern science the articular parts of the humerus, scapula, and clavicle are observed as the bony parts and joint formed is the glenohumeral joint which is the ball and socket variety of synovial joint. These bony parts are compared as Asthi the Marmasthana and glenohumeral joint may be compared as Sandhi in the Marmasthana.

**DISCUSSION**

As per Rachana Sharir the Kakshadhara is a Snayu Marma according to Sushruta and Sira Marma according to Vaghbhata. The Snayu Marma Viddhalakshana are Akshepaka (Convulsion), Stamhba (Stiffness), excessive Ruja in Snayus (Excessive pain in ligaments), Yanasthama Ashakhthi and Vaikalyatha (Deformity) in Anga. In the case of Kakshadhara Marma Vidho the symptoms explain is Pakshaghata. It is a Snayu Marma and Snayu observed in relation to Marama are glenohumeral ligaments, coracoacicular ligament, transverse humeral ligament, coracoacromial ligament, coracoclavicular ligament, and the clavpectoral fascia. Injury to these ligament will lead to the disability of joint. The clavpectoral fascia is a very important structure that protect the axillary vessels and nerves. The structure piercing the fascia are thoracoacromial artery, cephalic vein, and lateral pectoral nerve. An injury to clavpectoral fascia will damage these structures. An injury to the fascia can damage axillary artery, axillary vein, and axillary nerve. These all will lead to the disability of the arm. Acharya vaibhhta highlighted the importance of Siras in this region. The blood vessels related to Kakshadhara Marma are axillary artery, superior thoracic artery, thoraco acromial artery etc. An injury to these vessels will result in severe blood loss and lack of blood supply to the muscles of arm. This will lead to Pakshaghata.

In Erb’s palsy structure involved are upper trunk of the brachial plexus, specially suprascapular nerve, musculocutaneous nerve and axillary nerve, axillary vessels, injury in the armpit causes Erb’s palsy. The symptoms in Kakshadhara Marma and Erb’s palsy are same.

**CONCLUSION**

From the above classical description and practical observation, 1 conclude that Pakshaghata observed at Kakshadhara Marma can be called as Erb’s palsy. The structures affected in Erb’s palsy are C5-C6, suprascapular nerve, nerve to subclavius and anterior and posterior division of C5 - C6. The Viddhalakshana documented by Acharyas at the Kakshadhara Marma shows similarity with the signs and symptoms of Erb’s palsy caused by dystonia. The affected parts are the brachial plexus situated in between the Voksha and Kaksha region. At this site, Acharya Sushruta have stated the site of Kakshadhara Marma. Finally we can conclude that in Viddhalakshana of Kakshadhara Marma the injury to brachial plexus and in Erb’s palsy there is trauma to upper trunk of brachial plexus.

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