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A review on marmaghata described in ayurvedic classics W.S.R. to sport injuries

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Abstract

Ayurveda the science of life is the most ancient medical science which has focused primarily on preventive aspect rather than curative aspect, marma science is one of the exclusive and unique concepts of ayurveda, marma are vital and vulnerable areas of our body these areas or points are situated all over the body i.e. head, neck, trunk and extremities, so knowledge of marma areas is not only essential for individuals for protecting their vital and vulnerable areas of body from any injury but also for physician and surgeons to save these areas during surgical procedure or any medical intervention. Many references can be found in vedic literature regarding injury at marma region of soldiers of enemies and protection of one's marma by wearing guards. Marmas are formed by the conglomeration of muscles, vessels, ligaments, tendons, bones and their joints. These marma areas have tridosha, triguna, bhutatma and chetana dhatu, so any injury to these points may cause pain or even death, other symptoms which appear on injury of marma are giddiness, syncope, delusion, semiconsciousness, numbness etc. Detailed explanation of marmaghata or viddha lakshanas (effect of injury) has been given in classical Ayurvedic texts written during Samhita kala.

Modern world has given priority to sports. During the sport events, injuries are common, injuries to soft and hard tissues are the problem faced by sports persons as they have to go physical strain, stress and even death in the field.

Keywords: marma, vedic, tridosha, triguna, bhutatma, chetana dhatu, marmaghat, viddha lakshana, samhita

Introduction

In Ayurveda Marma is one of the extremely important topic. Marma point has been solidly accepted as the seats of life i.e. prana (the vital life force) if these spots are injured then it may lead to severe pain, disability, loss of function, loss of sensation even death. Therefore, the ancient classics have firmly directed that these vital points should not be injured and due care should be taken in this regard even while doing operation^[1].

Marma point is defined as anatomical site where muscles, veins, ligaments, bones and joints meet together. Achayra Sushruta has identified 107 marmas in human body^[2]. These are the seats of life "Prana" i.e. marmas are important points where life element exists^[1]. Any injury or insult to these vital points may lead to severe pain, disability, loss of function, loss of sensation or death. Sushruta states that the knowledge of these fatal spots would help the surgeons to put their instruments on the body parts wherein these marmas are absent or to conduct the surgery without harming these fatal spots or areas of the body. It plays an important role in surgery; therefore, it is called 'Shalya Vishayardha'^[3].

However, recent researches indicate that if any Marma point is inflamed or painful, then stimulating its nearby Marma points can help in diminishing this pain. More than a few studies and texts have reported the therapeutic benefits of Marma Therapy in treating various bodily and psychological disorders.

Sports injury is any bodily impairment sustained during participation in competitive or non-competitive sport events. In this modern era, sports become an industry, entrainment and promoter of so many business. Sport injuries can affect bones or soft tissue like muscles, ligaments, tendons, nerves etc. The sports persons are more prone to injuries and they are in need of some anatomical knowledge of joints and their action. By understanding these joint

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injuries through a broader perspective of marmabhighatha lakshanas it provides a wide range of diagnostic and curative scope to Ayurvedic practitioners [4].

Definitions of marma

- According to *Sushruta*, Marmas are the meeting place of the five elements of the body namely-mamsa (muscles), sira (blood vessels), snayu (ligaments), asthi (bones) and sandhi (joints). As a natural phenomenon, the pranas are seated at these meeting places. Therefore any injury to these places leads to serious consequences depending on the structure involved in the marma [5].
- According to *Charak*, Marmas are associated with *chetana dhatu*, the sensation of pain is more intense in these points in comparison with other body points. This confirms the vitality and sensitivity of the marmas [6].
- According to *Ashtang Hridaya*, Marmas are the sites where muscles, bones, ligaments, arteries, veins and joints meet each other. Prana is especially located there, and if they get afflicted, it may lead to death [7].
- All the above description make it clear, that injury or damage to these points will harm the life and will have serious impact on life.

Classification of marmas

Marmas have been classified in different ways, such as their location in body, anatomy, size, effect of injury on these etc.

- According to their Location: Shakhagat (44), Madhya Shareergat (26), Urdhvajatrugata (37) [8].
- According to Composition: (Predominance of tissue present) - Mamsa (muscle)- 11, Sira (vessels)- 41, Snayu (Ligaments)-27, Asthi (Bones)-8, Sandhi (Joints)-20 [9].
- According to Effect of Trauma: Sadhya pranahara (19),

Kalantar pranahara (33), Vaikalyakara (44), Vishalyaghna (3), Rujakara (8) [10].

Nature of marmas

Sadhya Pranahara marma is Agneya (having quality of fire), injury to these marma kills the affected person quickly [11]. The fatal time period of Sadhya Pranahara marma is less than 7 days [12]. These marma are 19 in number [10].

Kalantar Pranahara marma is Saumyagneya (having quality of water and fire mixed together) hence with their fire like nature, an injury to these marma kills the affected person quickly, but because of the cold and stable nature of soma (water), the occurrence of death is delayed [11]. The fatal time period for kalantar pranahara marma is from 15 days to 30 days [12]. These are 33 in number [10].

Vishalyaghna marma are Vayavya in nature (have qualities of air). If these marmas are injured by a shalya (foreign body), then because of their Vayavya nature, as long as the air remains obstructed inside by the mass of the shalya (foreign body), the person stays alive, but as soon as the foreign body is pulled out, the air residing in the fatal spot comes out and the person dies [11]. These are 3 in number [10].

Vaikalyakara marma are Saumya (having qualities of water). Because of the stability and cold property of water, these help in the sustenance of life [11]. These are 44 in number [10].

Rujakara marma predominantly have the properties of fire and air, both of which produce pain. Although Agni is diminished because of trauma, yet Vayu causes constant pain at the affected part [11]. These are 8 in number [10].

Location, anatomical correlation, size and number of marmas

Table 1: Marmas of Upper Limb (22)

Sr. No.	Marma	Location [13, 14, 15]	Anatomical Correlation [14]	No.	Size [16]
1.	Talahridaya	In the palm's center, in line of middle finger, just below 3 rd metacarpo-phalangeal joint	Palmer Aponeurosis	2	1/2 angula
2.	Kshipra	Between index finger and thumb	1 st Inter Metacarpal Ligament	2	1/2 angula
3.	Kurcha	From thumb's base, 1 finger above (proximal)	Carpometacarpal & Intercarpal Ligament	2	1 palm
4.	Kurchashira	1 finger below Kurcha, below wrist joint	Lateral Ligament of Wrist Joint	2	1 angula
5.	Manibandha	On top of the wrist	Wrist Joint	2	2 angula
6.	Indravasti	In the mid-line of hand, 4 finger below elbow crease	Origin of Palmer Longus Muscle	2	1/2 angula
7.	Kurpara	On the either side of the elbow joint	Elbow Joint	2	3 angula
8.	Ani	Just medial to mid-line of the hand, 3 fingers above elbow joint	Tendon of Bicep Muscle	2	1/2 angula
9.	Urvi	4 fingers above Ani, in mid of arm	Brachial Artery	2	1 angula
10.	Lohitaksha	Medial to mid-line of hand, over anterior axillary fold	Brachial Plexus	2	1/2 angula
11.	Kakshadhara	Below lateral 1/3 rd of clavicle and medial to head of humerus, in delto-pectoral groove	Axillary Vessels	2	1 angula

Table 2: Marmas of Lower limb (22)

Sr. No.	Marma	Location [13, 14, 15]	Anatomical Correlation [14]	No.	Size [16]
1.	Talahridaya	6 fingers proximal to 3 rd toe, center of sole	1 st Inter Metatarsal Ligament	2	1/2 angula
2.	Kshipra	Between 2 nd toe and big toe (in the web)	Long Planter Ligament	2	1/2 angula
3.	Kurcha	About 1 finger proximal to metatarso-phalangeal joint of big toe, over the sole	Tarsometatarsal & Intertarsal Ligament	2	1 palm
4.	Kurchashira	On either side (medial and lateral) over the heel, below ankle joint	Lateral Ligament of the Ankle Joint	2	1 angula
5.	Gulpha	Ankle joint	Ankle joint	2	2 angula
6.	Indravasti	In the mid-line, between 2 bellies of gastrocnemius muscle - lower leg's center	Calf Muscles	2	1/2 angula
7.	Janu	Knee joint	Knee joint	2	3 angula
8.	Ani	3 fingers above knee joint - upper leg's lower part	Tendon of Quadriceps Femoris	2	1/2 angula
9.	Urvi	Upper thigh's mid region	Femoral Vessels	2	1 angula
10.	Lohitaksha	Leg's upper part - below inguinal canal	Iliac Vessels	2	1/2 angula
11.	Vitapa	Between testicles and inguinal canal	Inguinal Ligament	2	1 angula

Table 3: Marmas of Abdomen (3)

Sr. No.	Marma	Location ^[14, 15, 17]	Anatomical Correlation ^[14]	No.	Size ^[16]
1.	Guda	Anus and the area surrounding it	Anal Canal and Anus	1	1 palm
2.	Vasti	In lower abdomen area - behind and above pubic symphysis	Urinary Bladder	1	1 palm
3.	Nabhi	In and around navel	Umblicus	1	1 palm

Table 4: Marmas of Thorax (9)

Sr. No.	Marma	Location ^[14, 15, 17]	Anatomical Correlation ^[14]	No.	Size ^[16]
1.	Hridaya	In thoracic cage's middle area, slightly to the left	Heart	1	1 fist
2.	Stanamula	2 finger below nipples' level (at about 6 th intercostal space)	Internal Mammary Vessels	2	1 angula
3.	Stanarohita	Breast's upper region (at about 2 nd - 3 rd intercostal space)	Lower Part of Pectoralis Major Muscle	2	1/2 angula
4.	Apalapa	On top of flanks and below shoulder joint	Lateral Thoracic and Subscapular Vessel	2	1/2 angula
5.	Apastambha	On either side of sternum, at 2 nd intercostal space	Two Bronchi	2	1/2 angula

Table 5: Marmas of Back (14)

Sr. No.	Marma	Location ^[14, 15, 18]	Anatomical Correlation ^[14]	No.	Size ^[16]
1.	Amsa	On top of back, between arm and neck - vertically parallel to either sacro-iliac(SI) joint	Coraco-humoral, Gleno-humoral Ligament, Trapezius Muscle	2	1/2 angula
2.	Amsaphalaka	Shoulder blade - just medial to scapular spine's Root	Scapular Spine	2	1/2 angula
3.	Vrihati	In line with either sacro-iliac(SI) joint - just above the level of scapula's inferior angle	Subscapular and Transverse Cervical Arteries	2	1/2 angula
4.	Parshvasandhi	Below the 12 th rib's inferior border, between flanks and buttock, at Renal angle	Common Iliac Vessels / Renal Angles	2	1 angula
5.	Nitamba	Buttock's upper region	Ischial Tuberosity	2	1/2 angula
6.	Kukundara	On lower iliac spine's either side	Sacroiliac Joint	2	1/2 angula
7.	Katikataruna	Over the line joining ischial tuberosity and femur's greater trochanter	Sciatic Notch	2	1/2 angula

Table 6: Marmas of Supraclavicular region (37)

Sr. No.	Marma	Location ^[14, 15, 19]	Anatomical Correlation ^[14]	No.	Size ^[16]
1.	Nila	Just lateral to trachea - at throat's base	Right and Left Common Carotid artery	2	1 palm
2.	Manya	About 1/2 finger downwards and posterior to angle of mandible - side of upper neck	Right Sub-clavian Artery and Internal Jugular Veins	2	1 palm
3.	Matrika	neck's both sides	Blood Vessels of the Neck	8	1 palm
4.	Krikatika	Joint of neck and head - just on occipital protuberance's inferior part	Atlanto Occipital Articulation	2	1/2 angula
5.	Vidhura	Below and at the back of ears	Posterior Auricular Ligament	2	1/2 angula
6.	Phana	Ala nasi's either side	Kiesselbach's Plexus in Little's Area of Nose	2	1/2 angula
7.	Apanga	Eyes' outer corner	Zygomatico-temporal Vessels	2	1/2 angula
8.	Avarta	At eyebrows' center - in orbital cavity's upper border	Junction of Frontal, Molar & Sphenoid Bone	2	1/2 angula
9.	Utkshepa	At hairline's border - above the temples	Temporal Muscles and Fascia	2	1/2 angula
10.	Shankha	On top of temples	Temples	2	1/2 angula
11.	Sthapani	On front of forehead - between the eyebrows	Nasal Arch of the Frontal Vein	1	1/2 angula
12.	Shringatak a	At the Center of confluence of veins that supply nourishment to eyes, ears, nose and tongue	Cavernous and Inter-cavernous sinuses	4	1 palm
13.	Simanta	Fissure on skull	Cranial Sutures	5	1 palm
14.	Adhipati	Top of head	Torcular Harophili	1	1/2 angula

Marmaghata (Trauma to the marma spots)

Any Injury/trauma to the Marma points, i.e. Marmaghata, can lead to severe pain, loss of sensation, loss of function, disability, and death. A important portion of Shalya Tantra deals with the knowledge of the fatal spots (marmas), because any trauma to these fatal points leads to sudden death, and if anyone survives due to the proficiency of the physician, the occurrence of deformities is almost certain ^[20, 21].

Marmaghata lakshana

Acharya Sushruta has mentioned the common symptoms of Marmaghata as follows ^[22].

- Bhrama (giddiness)
- Pralapa (delirium)
- Patana (fainting)
- Pramoha (delusion)

- Vicheshtana (loss of activity of the body parts)
- Sanlayana (semiconsciousness)
- Ushnataa (increase of body temperature)
- Srastaangataa (weakness of body parts)
- Murchha (fainting)
- Urdhwavata (increased expirations)
- Vatakrita Rujja (severe pain caused by Vata)
- Mansadokabham rudhiram cha gachchheta (Flowing out blood resembling meat washed fluid)
- Sarvendriyaarthoparamastathaiva (Cessation of activity of all sense organs).

In sports, injury of manibandha marma, janu marma, gulpha marma, kurcha sira marma are common. In all such conditions initial complaint of patients will be pain associated with swelling with or without deformity. Sometimes it has

been chronic due to improper treatment. These clinical conditions hamper the routine activities and also financial status of the individuals.

1. Manibandha marma

Anatomically correlated with Wrist joint, Radio-ulnar, radio-carpal ligaments, radial and median nerve artery. If injured during sports, Loss of flexion and extension of the second, third and fourth finger and adduction of second, third and fourth metacarpels. Bleeding may lead to pain, shock or infection [23].

2. Kurcha sira of the hand

Anatomically correlated with tendon of abductor pollicis longus, Tendon of flexor carpi radialis, tendon of extensor carpi radialis longus, tendon of extensor pollicis longus and brevis. If injured in sports, Impairment of the flexion and abduction of the wrist, bleeding from the radial artery and pain due to injury to the radial nerve [23].

3. Gulpha marma

Anatomically correlated with Flexor hallucis longus and bravis, tibialis posterior and flexor digital longus muscle, posterior tibial artery and vein. Symptoms if injured are: Injury to the joint will cause swelling and impair the function of the flexion and extension [23].

4. Janu marma

Anatomical structures corresponding to this Marma are articular capsule, fibular collateral ligament, anterior cruciate ligament, posterior cruciate ligament, medial meniscus, lateral meniscus, transverse ligament, coronary ligament and arcuate popliteal ligament. Sport injuries causing rupture of the ligaments of the knee joint may result in painful swelling, restricted movements and sometime haemarthrosis. Rupture of the ligament may also cause defective weight bearing leading to everlasting limping [24].

5. Kurcha shira marma of the foot

Anatomically correlated with structures: Peroneus bravis and longus muscle. Peritoneal artery and tributaries of short saphenous vein, peritoneal nerve. Damage to the ligaments and bone may cause severe pain along with the impairment of the function of the foot [23].

Sports related injury in ayurveda

1. Bhagna - Bone fracture
2. Sandhimukta- Joint dislocation and subluxation
3. Mamsagat Vata- Sprain and Fatigue syndrome
4. Snayugat Vata- Ligament, Nerve and Bursa injuries
5. Kandaragat Vata- Tendon injury

Conclusion

In the modern world, there is increasing importance given to the sports as it is the index of national pride. Fierce competition among the sport persons has led to the increased ratio of sports injuries which are specially related to the joints of locomotor system. Pain (ruja) is the prominent feature in most of the sport injury. The present article explored a detailed explanation of *marmaghata* or viddha lakshanas (effect of trauma), as given in classical texts written during Samhita kala. Injury to these Marmas (manibandha, kurchasira, janu, gulpha) in sports lead to different kind of symptoms varying from pain to immediate death. Application of marma chikitsa like snehana and swedana keeps all joints

flexible and resists the shock of injury.

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