

AN ANATOMICAL REVIEW OF PRATARA SANDHI W. S. R. TO LUMBAR ANKYLOSING SPONDYLITIS

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ABSTRACT

Introduction: Ankylosing Spodylitis¹ is a chronic inflammatory disorder that primarily involves the sacro iliac joint of the lumbar region. It is characterized by musculo skeletal pain, stiffness and immobility of spine and is one of the most common disease of the spine. Meeting place of two bones are known as *Sandhi*^{2,3}. Total eight types of *Sandhis*⁴ are explained by *Acharya* Sushruta according to their shape and their movement. *KORA*, *Ulukala*, *Samudga*, *Pratara*, *Tunnasevani*, *Vayasatunda*, *Mandala* and *Sankhavarta*. *Pratara Sandhi*⁵ can be compared to joints of vertebral column and these joints are also considered in the context of *Alpachala Sandhi*⁶.

Methods: The main objective of this study is aimed at Comprehensive Study and Conceptual Study on *Kati Trika Prushtavamsha Sandi Shareera* as mentioned in the Classics, Study the Structural Abnormalities of the Anatomy of Vertebral Column in Lumbar Ankylosing Spondylitis and to compare the Normal Radiological Structure of Lumbo Sacral Region with the Confirmed 30 cases of Lumbar Ankylosing Spondylitis.

Results: All the Patients were observed before treatment by Objective and Subjective Criteria.

Conclusion: As per the Study, Lumbar Ankylosing Spondylitis is more prone in young men than young women and lack of Spinal mobility with occupation has major role in this disease.

Keywords: Lumbar Ankylosing Spondylitis, Abnormalities of Vertebral Column, *Kati Trika Prushtavamsha Sandi Shareera*.

INTRODUCTION

Life is the combination of four factors, namely *Shareera*, *Indriya*, *Satwa* and *Athma*. Human Anatomy is the science that deals with the study of formation and structure of human body and this Structural Knowledge is foremost aspiration in medical profession. In Ayurveda Samhitha all the *Acharya* had described the whole body in six to six parts i.e. *Shadanga Shareera*. *Prushtavamsa*⁷ or Vertebral Column is at the *Prushta Bhaga* of the *Madhyama Shareera*⁸. The *Sandis* between *KASHERUKA* Of *PRUSHTA VAMSHA* are *Patara* in nature. The reference of *Prushta Vamsha* and *Kasherukas* are few in Ayurvedic *Samhithas*. *Acharya* Susruta had mentioned it while describing the number of bones, type of joints, *Marma Sthana* etc. also he mentioned twenty-four *Sandi* in *Prushta Pradeesha*, while belongs to *Pradhara* variety among the eight types of *Sandis*. The number of Vertebra present in the *Prushta Pradeesha* is thirty in number by Susrutha, Forty-five by Charaka are classified under *VALAYASTHI*. Ankylosing Spondylitis is a chronic inflammatory disorder that primarily involves the Sacro iliac joint of the lumbar region. It is characterized by Musculo Skeletal pain, stiffness and immobility of spine. It is the major burden now a days. In this study an attempt has been

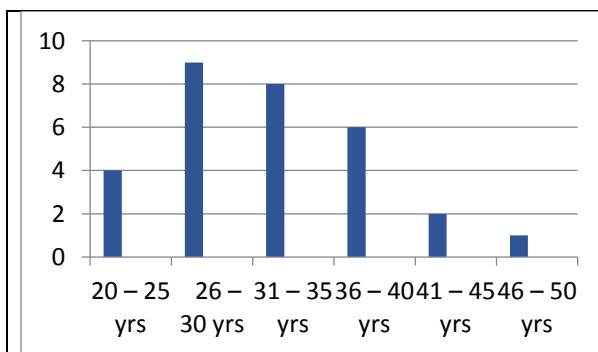
made to collect all the literature regarding *Kati*⁹ *Tika Prushta Vamshagada Sandi Shareera* from wide range of classical textbooks and reliable sources. Then compared its normal anatomy with pathological changes in *Asti Majjagadavata*¹⁰ (Ankylosing Spondylitis) by using radiological observations of 30 cases.

Aim and Objectives:

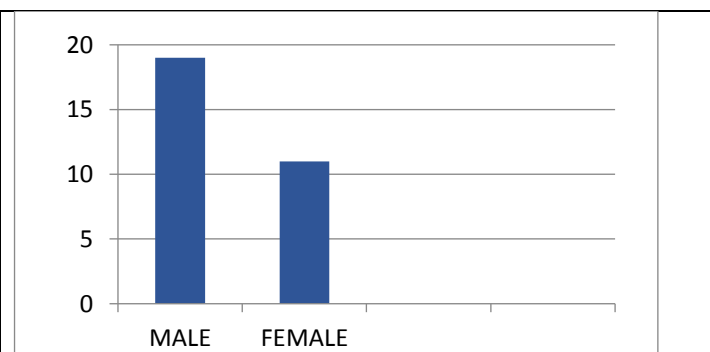
- Comprehensive Study and Conceptual Study on *Kati Trika Prushtavamsha Sandi Shareera* as mentioned in the Classics.
- To Study the Structural Abnormalities of the Anatomy of Vertebral Column in Lumbar Ankylosing Spondylitis.
- To Compare the Normal Radiological Structure of Lumbar Region with the Confirmed 30cases of Lumbar Ankylosing Spondylitis.

Analysis and Interpretations:

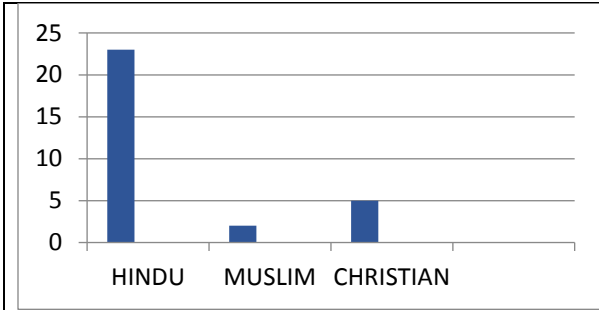
Present study was conducted among 30 patients ranging from age group of 20 to 50 with both sex, all were suffering from Ankylosing Spondylitis. All patients were observed before treatment by both objective and subjective criteria and following results were incurred based on the observation.



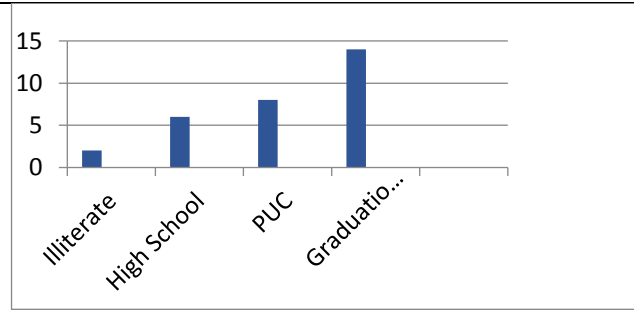
Graph 1: Showing age wise incidence of Ankylosing Spondylitis.



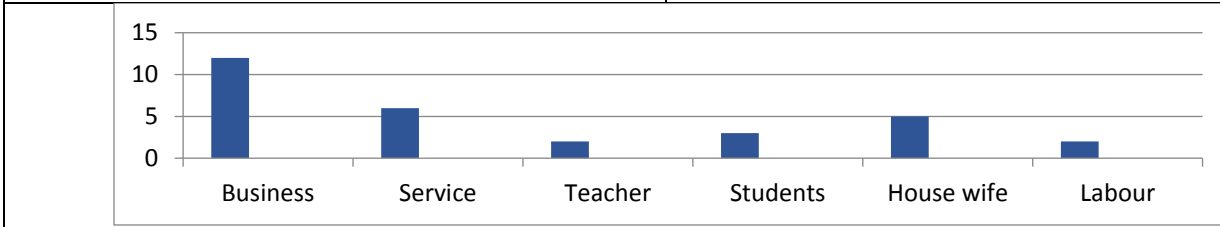
Graph 2: Showing Sex wise incidence of Ankylosing Spondylitis.



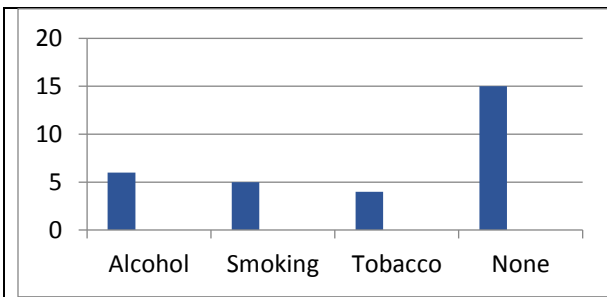
Graph 3: Showing Religion wise incidence of Ankylosing Spondylitis.



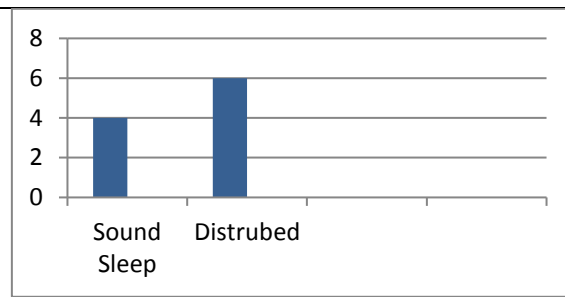
Graph 4: Showing Education Status wise incidence of Ankylosing Spondylitis.



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Graph 6: Showing Addiction wise incidence of Ankylosing Spondylitis.



Graph 7: Showing NIDRA wise incidence of Ankylosing Spondylitis.

S.N	Structural Changes	No. of. Patients	%
1.	Osteophytes	30	100
2.	Narrow Joint Space	30	100
3.	Erosions	30	100
4.	Soft Tissue Swelling	30	100

Table 1: Showing the bar diagram Structure wise incidence of Ankylosing Spondylitis.

S. N	<i>Sthambha</i> (Morning Stiffness)	No. of. Patients	%
1.	Grade-0 (normal)	00	00
2.	Grade-1 (< 3hrs)	00	00
3.	Grade-2 (3hrs)	03	10
4.	Grade-3 (3 – 4hrs)	12	40
5.	Grade-4 (> 4hrs)	15	50

Table 2: Showing the bar diagram *Sthambha* Grade wise incidence of Ankylosing Spondylitis.

S.N	<i>Ruja</i>	Normal	Mild	Moderate	severe
1.	Lateral lumbar flexion	Absent	>10 cm	5 – 10 cm	< 5 cm
2.	Forward lumbar flexion	Absent	>4 cm	2 – 4 cm	< 2 cm
3.	Maximum inter-malleolar distances	Absent	>100 cm	70 – 100 cm	< 70 cm

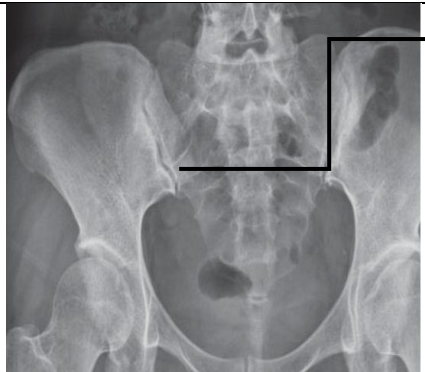
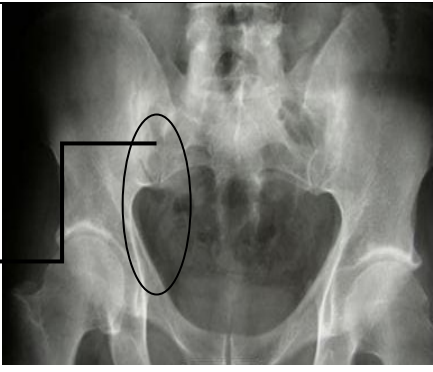
Table 3: Showing the bar diagram *Ruja* Grade wise incidence of Ankylosing Spondylitis.

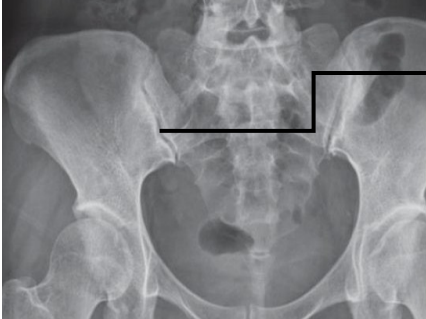




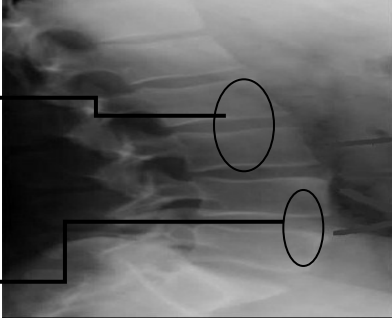
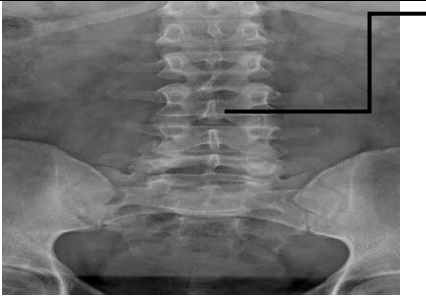
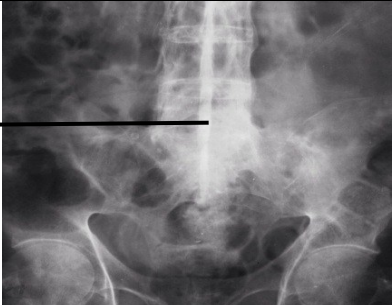
S.N	Lateral Flexion	Lumbar	No. of. Patients	%
1.	Grade-0		00	00
2.	Grade-1(mild)		02	07
3.	Grade2-(Moderate)		15	50
4.	Grade-3(Severe)		13	43


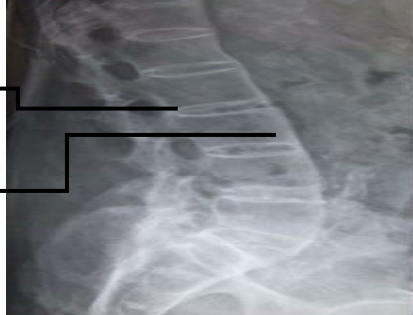

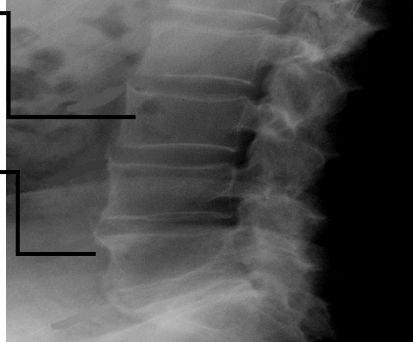

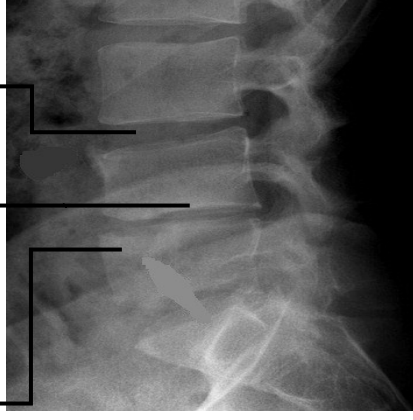
Table 4: Showing the bar diagram Pain during Lumbar lateral flexion Grade wise incidence of Ankylosing

				Spondylitis			
S.N	Forward Lumbar Flexion	No. of. Patients	%	S.N.	Maximum Inter Malleolar Distance	No. of. Patients	%
1.	Grade-0	00	00	1.	Grade-0	00	00
2.	Grade-1(mild)	02	07	2.	Grade-1(mild)	02	07
3.	Grade-2(Moderate)	15	50	3.	Grade 2 (Moderate)	15	50
4.	Grade-3(Severe)	13	43	4.	Grade-3(Severe)	13	43
Table 5: Showing the bar diagram Pain during Forward Lumbar flexion Grade wise incidence of Ankylosing Spondylitis				Table 6: Showing the bar diagram Pain during Maximum Inter Malleolar Distance Grade wise incidence of Ankylosing Spondylitis			
S.N	Grade	Changes		S.N	Sacro-iliac Changes	No. of. Patients	%
1.	Grade-0(Normal)	None		1.	Grade-0	00	00
2.	Grade-1(Minimal)	Suspicious (Patchy articular changes).		2.	Grade-1	00	00
3.	Grade-2(Moderate)	Loss of definition at the edge of joints with some sclerosis, minimal erosion.		3.	Grade-2	00	00
4.	Grade-3(Severe)	Definite Sclerosis on both sides with blurring and indistinct margins, loss of joint space.		4.	Grade-3	13	86
5.	Grade 4 (Ankylosis)	Complete fusion of joints		5.	Grade-4	02	14
Table 7: Showing the bar diagram Sacro-iliac Changes wise Grade incidences of Ankylosing Spondylitis.				Table 8: Showing the bar diagram Sacro-iliac Changes wise Grade incidences of Ankylosing Spondylitis Patients.			
S.N	Family History	No. of. Patients	%	S.N	Effected Area	No. of. Patients	%
1.	Present	24	80	1.	Sacro-iliac Joint	15	50
2.	Absent	06	20	2.	Lumbo-Sacral Junction	05	17
Table 9: Showing the bar diagram Family History wise incidence of Ankylosing Spondylitis.				Table 10: Showing the bar diagram Effected Area wise incidence of Ankylosing Spondylitis.			

Radiological Findings:

	<p>Normal Sacro-iliac Joint</p> <p>Grade-3 Sacro-iliitis with Sclerosis.</p> <p>Decreased joint Space.</p> <p>Partial Ankylosing Spondylitis.</p>	
Normal Sacro-iliac X-ray no.1 A.P. View		Sacro-iliac X-ray no.2 A.P. View with Partial Ankylosing Spondylitis

	<p>Normal Sacro-iliac Joint</p> <p>Grade-4 Sacro-illitis without Joint Space.</p> <p>Complete Ankylosing Spondylitis.</p>	
<p>Normal Sacro-iliac X-ray no.3 A.P. View</p>		<p>Sacro-iliac X-ray no.4 A.P. View with Complete Ankylosing Spondylitis</p>
	<p>Vertebral Body</p> <p>Syndesmophyte and Bony Fusion of Vertebral Body Edges.</p> <p>Disc Space</p>	
<p>Normal Lumbar Spine X-ray no.5 Lateral View</p>		<p>Lateral View Of Lumbar Spine with Syndesmophytes. X-ray no.6: Typical Feature of Ankylosing Spondylitis</p>
	<p>Vertebral Body</p> <p>Straightening Of Anterior Vertebral Margin with Osteitis of Anterior Corner of Vertebral Body Due subsequent Errosion.</p> <p>Syndesmophytes</p> <p>Disc Space</p>	
<p>Normal Lumbar Spine X-ray no.7 Lateral View</p>		<p>Lateral View Of Lumbar Spine with Squaring of Vertebral Body (Loss of Lordosis). X-ray no.8</p>
	<p>Spinous Process</p> <p>Dense Vertical Line in Midline (Ossification of inter-spinous and supra-spinous).</p>	
<p>Normal Lumbar Sacral Spine X-ray no.9. A.P View</p>		<p>A.P View Of Lumbar Spine with Dagger Sign. X-ray no.10</p>

	<p>Spinous Process</p> <p>Superior End Plate Sclerosis, Shiny Corner.</p> <p>Syndesmophytes (Ossification of Annulus Fibrosis)</p>	
<p>Normal Lumbar Sacral Spine X-ray no.11 A.P View</p>		<p>Lateral View Of Lumbar Spine with Bamboo Spine. X-ray no.12</p>
	<p>Syndesmophytes</p> <p>Inflamed Bone Marrow (Degeneration of Anterior Vertebral Edge of L-5 Vertebrae)</p>	
<p>Normal Lumbar Spine X-ray no.13 Lateral View</p>		<p>Lateral View Of Lumbar Spine with Romanus Lesion. X-ray no.14</p>
	<p>Superior End Plate</p> <p>Syndesmophytes at L-4 Intervertebral Disc Space</p> <p>Height Reduction of Intervertebral Disc Space and Sclerosis of End Plate of L-4 and L-5.</p> <p>Erosive Defect of Superior end Plate of L-5 with Signal loss of Surrounding Bone Marrow</p>	
<p>Normal Lumbar Spine X-ray no.15 Lateral View</p>		<p>Lateral View Of Lumbar Spine with Squaring of Vertebral Body (Loss of Lordosis). X-ray no.16</p>

DISCUSSION

Kati is considered as the waist region where dress is worn and is cylindrical region of *Madhya Shareera* among the *Shadanga* Of *Shareera*, *Shroniphalaka* themselves are called as *Kati*. The limitations of this region are already given by classical texts. Above is limited by *Nabhi*, below by *Medra* and *Muskha*. According to the modern science, umbilicus belongs be-

tween L-3 and L-4 region. Discussion on Disease-Osteophytes: *Vata Dosha* as *Asraya* and *Asrayi Bhava Sambhanda* with *Asthi*. *Vata Vriddi* Leads to *Asthi Kshaya* or *Asthi Vriddi*. This *Asthi Vriddi* may be correlated with osteophytes. *Asthi Vriddi* or *Adi Asthi* is the pathological signs of *Asti Majjagata Dathu Vaada* and this may lead to the fusion of vertebrae. Dehydration of Synovial membrane and inter vertebral disc,

Vitiated *Vata Dosha* gives *Ruksha* and *Khara Guna* on the *Kati Trika Prushtavamsha*, due to this *Sleshaka Kapha* with in the joints (*Jaleeya Guna* gets loss) due to this dehydration, movement within the joints get impaired. Due to this *Ruksha Guna* of *Vata* friction between the vertebrae are occurs and may close to each other (fusion). The main function of *Snayu* is *Sandhi Bandhana*. When aggravated *Vata* lodges in the *Snayus* of *Kati Trika Prushtavamsha* leads to *Snayu Vikriti* resulting in rigidity due to its *Ruksha Guna* and it may affect the surrounding structures like nerve root compression on *Kati Trika Pradesha*. When *Vata Dosha* affect the *Asthi* and *Majja Dhatu* leads to *Asthi Majja Dhatu Kshaya*, due to its *Ruksha Guna*. Narrowing of joint space is due to *Shotha* in *Sandhi*, erosion is due to *Asthi Majja Kshaya*. When aggravated *Vata* affecting the *Sleshmadara Kala* resulting thickening and gives inflammatory symptoms with pain on inter vertebral joints. Aggravated *Vata* when effects on *Mamsa Snayu* and *Kantara* undergoes *Shoshana* due to the *Ruksha Guna* of *Vata* leads to wasting and stiffness on it. *Asti Majjagata Dhatu vata* maybe correlated with Ankylosing spondylitis since its symptoms are also observed here, its pathology leads to functional and structural abnormality in *Kati Trika Prushtavamsha*. Discussion on Clinical Study-Data observed from study of thirty patients are being discussed below, Age: As per the study incidence was highest in the age of 20-25 years contributing 13 percentage, 30 patients in the age group of 26-30 years, 27 percentage in 31-35, 20 percentage in 36-40 years of age, 07 percentage in 41-45 years of age, 03 percentage in 46-50 years of age. It is most common (30 percentage) in the age between 26-30 years of age. Here present data signifies age factor must have influence over it due to the sedentary habits or life style, Sex: 63 percentage of patients were male and 37 percentage of patients were female, here study says that male sex is more susceptible for the disease may be due to, there was a tendency for male to have more Severe arthritic change. Male more often had radiological involvement of lumbar spine more restricted lumbar mobility and total spinal flexion. These finding may indicate less severe in female than male.

CONCLUSION

Present study proves that sacro iliac joint is primarily affected among the three joints that are taken for the study. Morning stiffness and nocturnal back pain were hallmark with different grade. *Asti Majjagata Vata* may be correlated with Lumbar Ankylosing Spondylitis in modern, because all most all symptoms of *Asti Majjaa Gata Vada* is similar with this, like *ASTHIBEDA* (stabbing pain on bones), *Parvabeda* (pain in small joints), *Asti Soola* (pain in joints), *Mamsa Kshaya* (depletion of muscle tissue), *Bala Kshaya* (decreased vitality and strength), *Adyasthi* (osteophytes), these are the complaints which comes under *Asti Padoshaja Vikara*, *Vinamada* is one of the symptoms of *Asti Majjagata Datu Vata* (bending of body as kyphosis) is the manifestation of *Majjavrita Vata*. All the patients of the study got relief by doing exercise, movements. As per the study we conclude that lack of spinal mobility with occupation (businesspeople who are sedentary) has major role in lumbar Lumbar Ankylosing Spondylitis through their history taking. Pathologies considered for the differential diagnosis within the Ayurvedic pattern includes *Grudrasi*, *Amavata*. *Grudrasi* was excluded by the patient having other dissimilar features like radiating pain from lumbar area to the lateral sides of leg up to *Gulpha Sandhi*, *Amavata* also excluded here due to Constitutional features like fever, anorexia, vomiting, are uncommon at onset. None of the patients having involvement of inter lumbar joints and lumbo sacral joints without involvement of sacro iliac joint in Lumbar Ankylosing Spondylitis, here it shows that Sacro iliac joint is primarily affected compared with other joints that are mentioned above.

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REFERENCES

1. Vander Heijde D, Baraf HS, Ramos-Remus C, et al. Evaluation of the efficacy of etoricoxib in Lumbar Ankylosing Spondylitis: results of a fifty-two-week, randomized, controlled study. *Arthritis Rheum* 2005; Pp: 1205, Page No:15.
2. Amaramishra, Amarakosha with Ramashrami commentary of Bhanuji Dikshitha; Edited by Pandit Hara-govinda Shastri; Chaukambha Sanskrit Sansthana; Va-ranasi; Reprint 2006; Pp: 664; Page No.: 529.
3. Vaidyaka Shabda Sindhu compiled by Kaviraja Umeshchandra Gupta; Revised and enlarged second edition by Kaviraj Nagendranath, Choukamba Orientalia; print 1999; Pp:1999; Page No:1077.
4. Sushruta. Yadavji Trikamji Accharya, editor. Sushruta Samhitha with Nibandha Sangraha of Dalhanacharya. 8th ed. Varanasi: Choukambha Orientalia; 2008. Pp- 824, Page No. 367
5. Sushruta. Yadavji Trikamji Accharya, editor. Sushruta Samhitha with Nibandha Sangraha of Dalhanacharya. 8thed. Varanasi: Choukambha Orientalia; 2008. Pp- 824, Page No- 367.
6. Sushruta. Yadavji Trikamji Accharya, editor. Sushruta Samhitha with Nibandha Sangraha of Dalhanacharya. 8thed. Varanasi: Choukambha Orientalia; 2008. Pp- 824, Page No. 366.
7. Sushruta, Sushruta Samhitha with Nibandha Sangraha commentary of Dalhanacharya and Nyaya Chandrika Panjika commentary of Gayadasacharya; Edited by Vaidya Jadavji Trikamji Acharya and Narayana Ram Acharya; 8th edition; Chaukambha Orientalia; Varanasi; 2005; Pp: 824; Page No.: 365
8. Agnivesha, Charaka Samhitha with Ayurveda Dipika commentary of Chakrapanidatta; Edited by Vaidya Jadavji Trikamji Acharya; Chaukambha Orientalia; Va-ranasi; Reprint 2007; Pp: 738; Page No.: 337
9. Sushruta. Yadavji Trikamji Accharya, editor. Sushruta Samhitha with Nibandha Sangraha of Dalhanacharya. 8thed. Varanasi: Choukambha Orientalia; 2008. Pp- 824, Page No- 45
10. Yogratnakara, By Dr. Indradeva Thripati and Dr. Dayashankar Thripati, Edited Yogaratnakara with Vaidyaparabha, Hindi commentary 1st edition 1998, Krishnadas Academy Oriental; Varanasi Pp:401, Page No-481.

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