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A STUDY ON ANKYLOSING SPONDYLITIS, ITS RISK FACTORS, AND MANAGEMENT IN TERTIARY CARE CENTRE OF HALDIA: CROSS-SECTIONAL OBSERVATIONAL STUDY

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ABSTRACT

Background: Ankylosing Spondylitis (AS) is a chronic inflammatory disease primarily affecting the axial skeleton, leading to progressive stiffness and pain. **Objective**: To study the demographic profile, risk factors, and evaluate the effectiveness of management strategies in AS patients. **Methods**: A cross-sectional study was conducted on 28 patients diagnosed with AS. Data were collected regarding age, gender, lifestyle, family history, clinical features, and treatment modalities. **Results**: The majority were males (78.6%) aged between 20-40 years. The most common risk factors identified were HLA-B27 positivity, positive family history, smoking, and sedentary lifestyle. NSAIDs and biologics (anti-TNF agents) showed substantial symptom relief. **Conclusion**: Early diagnosis and targeted therapy in AS significantly reduce disease progression. Risk factors such as genetic predisposition and smoking play a major role in disease onset and severity.

KEYWORDS: Ankylosing Spondylitis, NSAIDS.

INTRODUCTION

Ankylosing Spondylitis is a seronegative spondyloarthropathy that affects the sacroiliac joints, spine, and in some cases, peripheral joints. It predominantly affects young males and has a strong association with the HLA-B27 gene. Chronic inflammation leads to joint fusion, postural abnormalities, and decreased mobility[1]. Identification of risk factors and timely therapeutic intervention can significantly alter disease prognosis.

The global prevalence of Ankylosing Spondylitis (AS) is estimated to be between 0.1% and 1.4%. However, variations exist across different regions and populations. For example, studies have reported a prevalence of 23.8 per 10,000 in Europe, 31.9 per 10,000 in North America, and 16.7 per 10,000 in Asia. AS is also more common in men than women, with a ratio typically ranging from 2:1 to 3:1. Key points about AS prevalence: Global estimate[2]

While the overall prevalence is estimated between 0.1% and 1.4%, specific regions have different rates. Regional differences: North America, Europe, and Asia have higher prevalence rates compared to Latin America and Africa. Sex differences: AS is more prevalent in males than females, although recent studies suggest the ratio may be closer to 1:1 in some populations[3-5]. Age of onset: AS typically manifests in the second and third decades of life, with the majority of patients experiencing symptoms before the age of 30.HLA-B27:
Approximately 5% of the population is positive for the HLA-B27 gene, and about 80% of those individuals will develop AS[6-7].

Methods

This study was conducted in tertiary hospital. After obtaining institutional ethical committee approval It was Cross-sectional observational study conducted on 36 patients in the department of Orthopaedic, at a tertiary care centre, from June / 2022 to December/2022.
Total 40 participant were approached to project among them 12 were excluded due to non-fulfilling of eligibility criteria and 28 were included on the basis of fulling of the eligibility criteria
The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination

Study Design: Cross-sectional observational study
Sample Size: 28 patients
Duration: 6 months
Inclusion Criteria: Patients aged 18–55 years with a confirmed diagnosis of AS based on modified New York criteria
Exclusion Criteria: Patients with other autoimmune or degenerative joint diseases
Data Collection:

- Demographics: Age, gender, occupation
- Clinical: Duration of symptoms, joint involvement, mobility scores
- Risk factors: HLA-B27 status, smoking, alcohol use, family history
- Management: NSAIDs, DMARDs, anti-TNF agents, physiotherapy

Data Analysis: Descriptive statistics were used for demographic and clinical variables.

The data collected was entered in excel spread sheet. The data was analysed by using SPSS statistical software version 20. Statistical analysis in the form of percentages was done. Data analysis was performed using Statistical package for social sciences (SPSS, IBM, USA) version 20.0. Results were reported as mean ± standard deviation for quantitative variables
Statistical Analysis: SPSS v28, $p < 0.05$ significant

RESULTS

In this study we found that Ankylosing Spondylitis (AS) is associated with demographic profile of patient. 42.9%% patient suffered of Ankylosing Spondylitis (AS) is belongs to 31 to 40 years age group followed by 27.8% belong to 60 > years ag group.
It means age is important factors for Ankylosing Spondylitis (AS)increasing age will prone to AS.
Male (78.6%) were more prone to suffered of Ankylosing Spondylitis (AS) as compared to Female gender. (Table 1)

Table 1: Demographic Profile of Patients (n = 28)

Parameter	Number (%)
Age (years)	
18–30	10 (35.7%)
31–40	12 (42.9%)
41–55	6 (21.4%)
Gender	
Male	22 (78.6%)
Female	6 (21.4%)
Occupation	
Sedentary	15 (53.6%)
Active	13 (46.4%)

HLA B27 is one of the important risk factor for Ankylosing Spondylitis (AS) . Its prevalence is 82.1%(Table 2)

Table 2: Identified Risk Factors

Risk Factor	Number (%)
HLA-B27 Positive	23 (82.1%)
Positive Family History	16 (57.1%)
Smoking	14 (50%)
Alcohol Use	9 (32.1%)
Sedentary Lifestyle	15 (53.6%)

Management Outcomes:

- All patients received NSAIDs.
- 18 (64.3%) were given biologic therapy (anti-TNF).
- 22 (78.6%) practiced physiotherapy regularly.
- Patients receiving biologics had faster improvement in BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) scores.

DISCUSSION

This study reaffirmed the male predominance and genetic link (HLA-B27) of Ankylosing Spondylitis. Smoking and physical inactivity exacerbated symptoms and delayed functional recovery[8]. Early initiation of biologic therapy provided better control over inflammation and disease progression. Physiotherapy also played a vital role in maintaining spinal mobility and posture.

Ankylosing spondylitis (AS) risk factors include genetics, age, and other health conditions[9]. The HLA-B27 gene is strongly associated with AS, though having the gene doesn't guarantee development of the disease. Most people with AS develop symptoms before age 30, and men are more likely to be affected than women. Additionally, having a family history of AS or conditions like Crohn's disease, ulcerative colitis, or psoriasis can increase the risk. Here's a more detailed breakdown: Genetics: The HLA-B27 gene is a major risk factor. While many people with this gene don't develop AS, it significantly increases the likelihood[10].

In this study we found that Ankylosing Spondylitis (AS) is associated with demographic profile of patient. 42.9%% patient suffered of Ankylosing Spondylitis (AS) is belongs to 31 to 40 years age group followed by 27.8% belong to 60 > years ag group.

It means age is important factors for Ankylosing Spondylitis (AS)increasing age will prone to AS. Male (78.6%) were more prone to suffered of Ankylosing Spondylitis (AS) as compared to Female gender. (Table 1) Age: AS typically emerges in late adolescence or early adulthood, with most people experiencing their first symptoms before age 30. Sex: Men are more prone to developing AS than women. Family History: Having a family member with AS raises the chance of developing the condition.[11-13] Other Autoimmune Diseases: Conditions like Crohn's disease, ulcerative colitis, and psoriasis are associated with an increased risk. Gut Inflammation: Many individuals with AS also experience gut inflammation, suggesting a possible link between gut health and the disease's development. Smoking: Some research indicates a potential connection between smoking and the onset of AS, though more research is needed. Childhood Infections: Studies suggest a possible association between childhood respiratory infections and later development of AS. The limited sample size and single-center data collection are study limitations. However, the findings highlight the value of early detection and personalized treatment plans in AS[14-15].

Management of ankylosing spondylitis (AS) focuses on relieving pain and stiffness, maintaining mobility, and preventing complications. Treatment typically involves a combination of medication, physical therapy, and lifestyle adjustments. Medications: NSAIDs: Nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and naproxen are often the first line of treatment for pain and inflammation. Biologics:

If NSAIDs are not sufficient, TNF inhibitors (e.g., adalimumab, infliximab, etanercept) or interleukin-17 inhibitors may be used to target inflammation. Corticosteroids: Short-term use of corticosteroids can help manage flare-ups, but long-term use is avoided due to potential side effects. Other Medications: Janus kinase (JAK) inhibitors and disease-modifying anti-rheumatic drugs (DMARDs) may be considered in some cases. Physical Therapy: Exercise: Regular exercise, including specific exercises to improve posture, flexibility, and strength, is crucial for managing AS [16-17].

HLA B27 is one of the important risk factor for Ankylosing Spondylitis (AS). Its prevalence is 82.1% (Table 2)

Physical Therapy: A physical therapist can design personalized exercise programs and teach techniques for maintaining good posture and managing pain. Hydrotherapy: Some individuals find hydrotherapy (exercises in water) beneficial for pain relief and increased mobility [18-19]. Lifestyle Adjustments: Posture: Maintaining good posture is essential for preventing spinal stiffness and pain. Healthy Lifestyle: A healthy diet, not smoking, and regular exercise can help reduce the risk of complications. Support Groups: Connecting with support groups can provide emotional support and practical advice. Surgery: Surgery is rarely needed but may be considered for severe pain or joint damage

CONCLUSION

Ankylosing Spondylitis primarily affects young males and is closely linked to HLA-B27. Identification of modifiable risk factors such as smoking and inactivity, alongside effective management using biologics and physiotherapy, can significantly improve patient outcomes. Larger multicentric studies are needed for generalization.

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

REFERENCES

1. Bridgewood C, Watad A, Cuthbert RJ, McGonagle D. Spondyloarthritis: new insights into clinical aspects, translational immunology and therapeutics. Curr OpinRheumatol. 2018 Sep;30(5):526-532. [PubMed]
2. Watad A, Cuthbert RJ, Amital H, McGonagle D. Enthesitis: Much More Than Focal Insertion Point Inflammation. Curr Rheumatol Rep. 2018 May 30;20(7):41. [PMC free article] [PubMed]
3. Mahmoudi M, Garshasbi M, Ashraf-Ganjouei A, Javinani A, Vojdanian M, Saafi M, Ahmadzadeh N, Jamshidi A. Association between rs6759298 and Ankylosing Spondylitis in Iranian Population. Avicenna J Med Biotechnol. 2018 Jul-Sep;10(3):178-182. [PMC free article] [PubMed]
4. van den Berg R, Jongbloed EM, de Schepper EIT, Bierma-Zeinstra SMA, Koes BW, Luijsterburg PAJ. The association between pro-inflammatory biomarkers and nonspecific low back pain: a systematic review. Spine J. 2018 Nov;18(11):2140-2151. [PubMed]
5. Wang R, Ward MM. Epidemiology of axial spondyloarthritis: an update. Curr OpinRheumatol. 2018 Mar;30(2):137-143. [PMC free article] [PubMed]
6. Aloush V, Dotan I, Ablin JN, Elkayam O. Evaluating IBD-specific antiglycan antibodies in serum of patients with spondyloarthritis and rheumatoid arthritis: are they really specific? Clin Exp Rheumatol. 2019 Jan-Feb;37(1):32-36. [PubMed]
7. Rabelo CF, Baptista TSA, Petersen LE, Bauer ME, Keiserman MW, Staub HL. Serum IL-6 correlates with axial mobility index (Bath Ankylosing Spondylitis Metrology Index) in Brazilian patients with ankylosing spondylitis. Open Access Rheumatol. 2018;10:21-25. [PMC free article] [PubMed]
8. Rahbar MH, Lee M, Hessabi M, Tahanan A, Brown MA, Learch TJ, Diekman LA, Weisman MH, Reveille JD. Harmonization, data management, and statistical issues related to prospective multicenter studies in Ankylosing spondylitis (AS): Experience from the Prospective Study Of Ankylosing Spondylitis (PSOAS) cohort. Contemp Clin Trials Commun. 2018 Sep;11:127-135. [PMC free article] [PubMed]
9. Kucybała I, Urbanik A, Wojciechowski W. Radiologic approach to axial spondyloarthritis: where are we now and where are we heading? Rheumatol Int. 2018 Oct;38(10):1753-1762. [PMC free article] [PubMed]
10. 11.Kivitz AJ, Wagner U, Dokoupilova E, Supronik J, Martin R, Talloczy Z, Richards HB, Porter B. Efficacy and Safety of Secukinumab 150 mg with and Without Loading Regimen in Ankylosing Spondylitis: 104-week Results from MEASURE 4 Study. Rheumatol Ther. 2018 Dec;5(2):447-462. [PMC free article] [PubMed]
11. Liang H, Tian X, Liu XL, Wang SY, Dai Y, Kang L, Chen LS, Jin LF. The comparative efficacy of group- versus home-based exercise programs in patients with ankylosing spondylitis: Protocol for a meta-analysis. Medicine (Baltimore). 2018 Jul;97(29):e11540. [PMC free article] [PubMed]
12. Clegg DO. Treatment of ankylosing spondylitis. J Rheumatol Suppl. 2006 Sep;78:24-31.
13. Dagfinrud H, Kvien TK, Hagen KB. Physiotherapy interventions for ankylosing spondylitis. Cochrane Database Syst Rev. 2008 Jan 23;2008(1):CD002822. [PMC free article] [PubMed]
14. 1Giannotti E, Trainito S, Arioli G, Rucco V, Masiero S. Effects of physical therapy for the management of patients with ankylosing spondylitis in the biological era. Clin Rheumatol. 2014 Sep;33(9):1217-30. [PubMed]
15. Spadaro A, De Luca T, Massimiani MP, Ceccarelli F, Riccieri V, Valesini G. Occupational therapy in ankylosing spondylitis: Short-term prospective study in patients treated with anti-TNF-alpha drugs. Joint Bone Spine. 2008 Jan;75(1):29-33. [PubMed]
16. Armuzzi A, Felice C, Lubrano E, Cantini F, Castiglione F, Gionchetti P, Orlando A, Salvarani C, Scarpa R, Marchesoni A, Vecchi M, Olivieri I., Italian SpA-IBD Expert Panel Group. Multidisciplinary management of patients with coexisting inflammatory bowel disease and spondyloarthritis: A Delphi consensus among Italian experts. Dig Liver Dis. 2017 Dec;49(12):1298-1305. [PubMed]
17. Agca R, Heslinga SC, Rollefstad S, Heslinga M, McInnes IB, Peters MJ, Kvien TK, Dougados M, Radner H, Atzeni F, Primdahl J, Södergren A, Wallberg Jonsson S, van Rompay J, Zabalan C, Pedersen TR,

Jacobsson L, de Vlam K, Gonzalez-Gay MA, Semb AG, Kitas GD, Smulders YM, Szekanecz Z, Sattar N, Symmons DP, Nurmohamed MT. EULAR recommendations for cardiovascular disease risk management in patients with rheumatoid arthritis and other forms of inflammatory joint disorders: 2015/2016 update. Ann Rheum Dis. 2017 Jan;76(1):17-28. [PubMed]

18. Krabbe S, Glintborg B, Østergaard M, Hetland ML. Extremely poor patient-reported outcomes are associated with lack of clinical response and decreased retention rate of tumour necrosis factor inhibitor treatment in patients with axial spondyloarthritis. Scand J Rheumatol. 2019 Mar;48(2):128-132. [PubMed]
19. Deminger A, Klingberg E, Geijer M, Göthlin J, Hedberg M, Rehnberg E, Carlsten H, Jacobsson LT, Forsblad-d'Elia H. A five-year prospective study of spinal radiographic progression and its predictors in men and women with ankylosing spondylitis. Arthritis Res Ther. 2018 Aug 03;20(1):162. [PMC free article] [PubMed]