AIM: To study the spectrum of imaging appearances on CT and MRI in ankylosing spondylitis with HLA B27 positive patients in kumaon region.

Materials and Methods: This was a prospective study conducted in the department of Radiodiagnosis Government Medical College and Dr Susheela Tiwari Memorial Hospital, Haldwani. This study was carried out on 51 cases of ankylosing spondylitis HLA B27 positive cases. CT and MRI features were observed on T1 weighted, T2 weighted and short tau inversion recovery (STIR) sequences. The Spectrum of imaging was studied on the basis of history, clinical evaluation and characteristic radiological features on C.T. and M.R.I.

Results: The disease was most commonly seen in adults with a male predominance in 37 (72.5%) cases. Backache (82.4%) was most common clinical feature followed by inflammation in (80%) cases. Lumbar spine was the most common site in 45 (88%) cases with bilaterally symmetrical involvement in 45 (88%) cases. Subchondral sclerosis was better appreciated in C.T. in 34 (66.6%) cases followed by joint erosion in 23 (45%) cases and joint space alteration in 15(29.4%) cases. Whereas, bone marrow edema 37 (72.5%) cases was better appreciated in M.R.I followed by articular margin irregularity in 34(66.6%) cases and presence of erosion in 32 (62.7%) cases.

Conclusion: Imaging is an integral part in the early detection of disease and optimizing management of affected patients for their better prognosis. CT and MRI plays a decisive role in the diagnosis and these modalities are also helpful in monitoring the disease.

KEYWORDS
Ankylosing spondylitis (AS), Short tau inversion recovery (STIR), Human leucocyte antigen (HLA) B27

INTRODUCTION:- Spondyloarthropathy constitute a group of chronic inflammatory rheumatic diseases, which includes reactive arthritis (Reiter syndrome), ankylosing spondylitis, psoriatic arthritis, arthritis or spondylitis associated with inflammatory bowel disease, as well as undifferentiated spondyloarthritis.[1] These afffections predominantly cause pain, stiffness and affect the axial skeleton.[2] These patients are seronegative for rheumatoid factor and are commonly associated with the presence of human lymphocyte antigen (HLA) B27.[3] They are mostly differentiated on the basis of clinical features and the distribution of abnormal radiographic findings.[4] Sacroiliac joints are involved in majority of cases and sacroilitis being the first manifestation .[5,6] Ankylosing spondylitis causes inflammation leading to severe chronic pain and discomfort due to involvement of spinal joint. In more advanced cases, this inflammation can lead to ankylosis - causing spine to fuse and fix leading to immobility.[7] The spondyloarththropathies share common clinical, radiological, and genetic features that are clearly distinct from inflammatory rheumatic diseases. [8] A finding of sacroilitis at radiography is the classic feature of axial spondyloarthropathy.[9]

AIM:- To study the spectrum of imaging appearances on CT and MRI in ankylosing spondylitis patients with HLA B27 positive status in kumaon region.

OBJECTIVES:-
1. To study the imaging appearances of ankylosing spondylitis with computed tomography.
2. To study the imaging appearances of ankylosing spondylitis with magnetic resonance imaging
3. The study of the inflammatory changes and bony changes of sacroiliac joint on magnetic resonance imaging and computed tomography.

MATERIALS AND METHOD:- The study was carried out on a prospective basis in the department of Radiodiagnosis Government Medical College and Dr Susheela Tiwari Memorial Hospital, Haldwani. The period of study was one year, from November 2017 to October 2018. Total 51 patients were included in the study. A detailed history, clinical examination and lab investigations were done. MRI examination was conducted using a Siemens Magnatom 1.5 Tesla MRI machine using abdominal surface coils and CT examination was conducted with 16 slice MDCT Siemens machine. Non-contrast CT (NCCT) was performed in supine position with 25–30 degree cranial gantry tilt to obtain images through both the cartilaginous and ligamentous portions of the SJ joint using the 16 slice CT scanner.

Inclusion criteria:
1. Should have inflammatory low back pain
2. Low back pain >3months
3. improved with exercise
4. Not relieved by rest
5. Limited lumbar motion
6. Patients with HLA-B27 positive status
7. Patients with age group 20-35 yr

Exclusion criteria:
1. Patient not willing for the study
2. Patients with cardiac pacemakers & metallic implants
3. Motion disorder and claustrophobic patients
4. Overlap Syndrome
5. Patients with HLA-B27 negative status
6. Age <20yr and >35yr.

RESULT:- Out of total 51 patients diagnosed Ankylosing spondylitis, 43 patients were males, while 8 were females (5.4:1). The age range of patients was from 20 to 35 years. The age distribution of patients has been depicted in (Chart 1).

CHART 1: Bar graph depicting the age distribution of patients.

The maximum number of patients noted were young adults, in the age group of 21-30 years (46.6%). The clinical features noted were back pain, fatigue, stiffness and inflammation. Back pain emerged as the most common symptom, seen in 42 (27%), followed by stiffness in 38 (24%), fatigue 35 (23%) and inflammation 41(26%). The clinical...
findings have been elaborated in (Chart 2).

CHART 2: Pie chart depicting the clinical features.

Bilateral symmetry was seen in 45 (88%) cases and 6 (12%) are unilateral. Almost all cases were associated with HLAB27 positive status along with 36 patient associated with smoking. Lumbar spine was involved in 45 (65%) patients and cervical was involved in 24 (35%) patients.

The main CT features are bone erosions, joint space alterations, subchondral sclerosis, and ankylosis. On C.T. finding, 34 (35%) cases presented with subchondral sclerosis followed by joint erosion in 23 (24%) cases, joint space alteration in 15 cases (16%), bony ankylosis in 10 cases (11%), facet inflammatory disease in 7 (7%) cases, bony lesion in 5 (5%) cases, spinal canal stenosis and vertebral scoliosis in 1 (1%) case. (Table 1)

TABLE 1: COMPUTED TOMOGRAPHY FEATURES

<table>
<thead>
<tr>
<th>COMPUTED TOMOGRAPHY FINDINGS</th>
<th>NO. OF PATIENTS (PERCENTAGE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint erosion</td>
<td>23 (24%)</td>
</tr>
<tr>
<td>Subchondral sclerosis</td>
<td>34 (35%)</td>
</tr>
<tr>
<td>Bony ankylosis</td>
<td>10 (11%)</td>
</tr>
<tr>
<td>Joint space alteration</td>
<td>15 (16%)</td>
</tr>
<tr>
<td>Fractures</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Spinal canal stenosis</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Bony lesion</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>Vertebral scolapping</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Facet inflammatory dis.</td>
<td>7 (7%)</td>
</tr>
</tbody>
</table>

On M.R.I finding, presence of marrow oedema was seen in 37 (22%) cases followed by irregularities of articular margins in 34 (21%) cases, presence of erosion in 32 (19%) cases, subchondral sclerosis in 23 (14%) cases, narrowing of joint space in 15 (9%) cases, bony ankylosis in 9 (5%) cases, spinal canal compromise in 7 (4.2%) cases, spinal canal injury in 6 (4%) cases and spinal cord stenosis in 3 (2%) cases (Table 2).

TABLE 2: MAGNETIC RESONANCE IMAGING FEATURES

<table>
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<tr>
<th>MAGNETIC RESONANCE IMAGING FINDINGS</th>
<th>NUMBER OF PATIENTS (PERCENTAGE)</th>
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<tbody>
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<td>Presence of marrow oedema</td>
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</tr>
<tr>
<td>Spinal canal compromise</td>
<td>7 (4.2%)</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>6 (4%)</td>
</tr>
</tbody>
</table>

DISCUSSION: In this study, males were most commonly affected compared to females which is in favour to study done by J Braun et al[10] and Frane et al[11] in contrast to study done by Jimenez et al[12]. Lumbar predominance was more than cervical which is in favour to study done by Jennifer et al[13] and in contrast to study done by Resnick et al[14] in which cervical were more common in women.
In the present set of patients, the CT showed higher sensitivity for detecting subchondral sclerosis i.e. 34 (66.6%) cases and joint erosions in 23 (45%) cases, in favour to study done by Wilfred et al [15]. MRI showed more marrow oedema in 37 cases in favour to study done by J Braun et al [16], Mikkel et al [17] and Anne et al [18]. Another study by Battafarano DF et al [19] found MRI has 100% predictability and is the best single test for confirming active inflammatory SI. Similar study by Finbar o’shea et al [20], observed that acute inflammation is better reflected by MRI.

CONCLUSION:- Imaging is an integral part in the early detection of disease and optimizing management of affected patients for their better prognosis. CT and MRI plays a decisive role in the diagnosis and these modalities are also helpful in monitoring the disease.

Conflicts of interest
There are no conflicts of interest.

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