

# Role of high resolution sonography in symptomatic knee joint

Sanjay Kumar Jha<sup>\*</sup>, Rajiv Ranjan<sup>\*\*</sup>

<sup>\*</sup> Assistant Professor, <sup>\*\*</sup> Professor, Department of Radiodiagnosis, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, INDIA.  
Email: [dr.hemu71@gmail.com](mailto:dr.hemu71@gmail.com)

## Abstract

**Background:** A joint effusion is a common finding in patient with knee pain and swelling. USG is very much sensitive in detection of fluid. Role of ultrasound is multifaceted. **Aims and Objectives:** To re-establish the gradually increasing role of USG in detecting pathologies in patients presenting with pain and swelling of knee and also to establish its role in FNAC /Biopsy. **Materials and Methods:** Selected cases from orthopaedic OPD of Darbhanga Medical College and Hospital constituted the material of my study. A total number of 50 cases of swollen and painful knee joints were studied in these series. **Result:** In my study I found 23 cases of echo free effusion and 8 cases of echogenic effusion. Most cases of echo free effusion were either due to osteoarthritis or rheumatoid arthritis. Echogenic effusion was mostly related to traumatic injury to the knee. **Conclusion:** Ultrasound is the first choice of investigation in detecting and diagnosing peri-articular pathology and it is best choice for guidance of needle puncture or biopsy in peri-articular diseases.  
**Key Words:** Knee Joint effusion, Ultrasound.

## \*Address for Correspondence

Dr. Sanjay Kumar Jha, Assistant Professor, Department of Radiodiagnosis, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, INDIA.

Email: [dr.hemu71@gmail.com](mailto:dr.hemu71@gmail.com)

Received Date: 20/05/2017 Revised Date: 03/06/2017 Accepted Date: 28/07/2017

Access this article online	
Quick Response Code:	Website: <a href="http://www.medpulse.in">www.medpulse.in</a>
	Volume 7 Issue 3

## INTRODUCTION

A joint effusion is a common finding in patient with knee pain and swelling. USG is very much sensitive in detection of fluid. Role of ultrasound is multifaceted.

1. It helps in detection of joint fluid and its nature.
2. It can assess synovial pathology.
3. It can also assess tendon and ligaments around knee.
4. It also detects bursal disease around knee.
5. It also helps in detection of intra-articular loose bodies, foreign bodies, thickness of articular cartilage and synovial membrane.

## MATERIALS AND METHODS

Selected cases from orthopaedic opd of Darbhanga Medical College and Hospital constituted the material of my study. Case selection was done in the following criteria:

1. Patients of all ages and sexes with pain and swelling of their knees without history of trauma (Group A) and with history of trauma (Group B)
2. Those patients having fractures and tumours of bones around the knee joint are excluded from my study.

Before USG examination the following were done first:

1. Clinical assessment
2. X-ray of the affected knee.
3. Laboratory investigation

The clinical assessment of patient with painful and swollen knee was performed in orthopaedic department. Standard AP and Lateral radiograph of both knee and ultrasound were performed DMCH Department of Radiodiagnosis. X rays were studied for detection of bony changes joint space and effusion,. For ultrasound multi-frequency linear high resolution probe with central frequency of 7.5MHZ was used. Ultrasonological examination of both affected and unaffected knees were done in each case.

## RESULT AND ANALYSIS

A total number of 50 cases of swollen and painful knee joints were studied in these series. They are grouped into Group A and Group B as described in material and methods.

**Table 1:** Sex distribution of group a cases

Disease	Male	Female	M/F Ratio
OA	10	12	1-1.2
RA	2	5	2-5
TB	1	1	1-1
Prepatellar Bursitis	0	4	All females
Gastrocnemius Semimembranosus bursitis	1	1	1-1

**Table 2:** Age distribution of group b cases

	0-10	10-20	20-30	30-4-	40-50
Quadriceps tendon tear			2		
MCL tear		1	1		
Meniscal cyst				1	
Intrarticular F.B.		1			
Meniscal tear			2		
PCL Tear			1		
Haemarthrosis		2	2		

**Table 3:** USG findings of osteoarthritis patients

Findings	No of cases	Percentage
Articular cartilage loss	20	91%
Joint effusion	15	69%
Baker's cyst	9	41%
Loose bodies	4	18%
Synovial thickening	4	18%

**Table 4:** USG findings of RA patients

Findings	No of cases	Percentage
Synovial thickening	7	100%
Knee joint effusion	7	100%
Baker's cyst	4	59%
Baker's cyst with calcified loose body	2	21%

**Table 5:** Comparison between xray and ultrasound in detecting joint effusion

Usg diagnosed joint effusion	31	100%
Xray diagnosed joint effusion	10	33%

## DISCUSSION

Painful and swollen knee is a common clinical problem in orthopaedics and rheumatological practice. A multitude

of conditions cause knee pain. Meticulous history taking, physical examination, appropriate laboratory and imaging studies are necessary for accurate diagnosis. Most cases having their intra articular pathology had joint effusion. Ultrasound provides most sensitive easily available and useful tool in detecting joint effusion. It can show the evidence of very small amount of effusion. Arthosonography also dictate the nature of effusion. In my study I found 23 cases of echo free effusion and 8 cases of echogenic effusion. Most cases of echo free effusion were either due to osteoarthritis or rheumatoid arthritis. Echogenic effusion was mostly related to traumatic injury to the knee. Marchal *et al*, 1987 in their study showed that sonography can detect fluid as small as 1ml. In may,2003 Kane D *et al* proved that USG is more sensitive in detecting baker cyst, joint effusion and supra patellar bursitis. In 2004 Karim Z *et al* establish the role of ultrasound in both diagnosis and outcome assessment of arthritis. Court-payen M also told that in inflammatory joint diseases ultrasound appropriate for early diagnosis and follow up of joint effusion and synovitis.

## CONCLUSION

Ultrasound provides most sensitive and easily available tool in detecting joint effusion and nature of effusion. Ultrasound is appropriate for early diagnosis and follow up of inflammatory and infective arthritis. It is also a sensitive tool to guide joint aspiration and to take synovial biopsy. It is also of immense value in diagnosing and locating intra-articular foreign bodies. Ultrasound is the first choice of investigation in detecting and diagnosing peri-articular pathology and it is best choice for guidance of needle puncture or biopsy in peri-articular diseases.

## REFERENCES

1. Bianchi S et al : Sonographic evaluation of lipohaemarthrosis: clinical and in vitro study
2. Selvy B, et al: High resolution sonography of the menisci of the knee
3. Baker WM: On the formation of synovial cysts in the leg in connection with disease of knee joint.
4. Yasuda K, Majima J: Intra-articular ganglion blocking extension of the knee.
5. Miller TT et al : Sonography of patellar abnormalities in children

Source of Support: None Declared  
Conflict of Interest: None Declared