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MRI Findings of Medial Collateral Ligament Complex In Early Osteoarthritis of The Knee

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Disclosures

The speaker have no financial conflicts of interest to disclose concerning the presentation



Introduction

A novel concept for understanding osteoarthritis (OA)¹⁾



Purpose

- To characterize MRI image findings at the medial collateral ligament (MCL) complex in medial knee OA



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Methods

- ✓ 79 patients 82 knees presented with non-traumatic medial knee pain between April 2018 and March 2021

Exclusion criteria: < 30 years old

history of trauma, rheumatoid arthritis,
previous surgery and cranial nerve disease

Early OA group = KL grade 0, 1

Advanced OA group = KL grade 2, 3, 4



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Valuables

8 MRI findings of enthesitis proposed by the OMERACT MRI in Enthesitis Initiative²⁾

1. Intra-ligament hypersignal
2. Peri-ligament hypersignal
3. Bone marrow edema
4. Bursitis
5. Enteseal thickening
6. Osteophyte
7. Bone erosion
8. Intra-ligament hypersignal on T1w



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Result

Demographic data

	Early OA n = 36	Advanced OA n = 46	P value
Age	50.1 ± 10.5	61.4 ± 12.3	0.048
Sex(M : F)	8 : 28	10 : 36	0.764
BMI	24.2 ± 2.4	25.1 ± 2.2	0.691

Non-paired T test, p < 0.05



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Result

Frequency of abnormal MRI findings

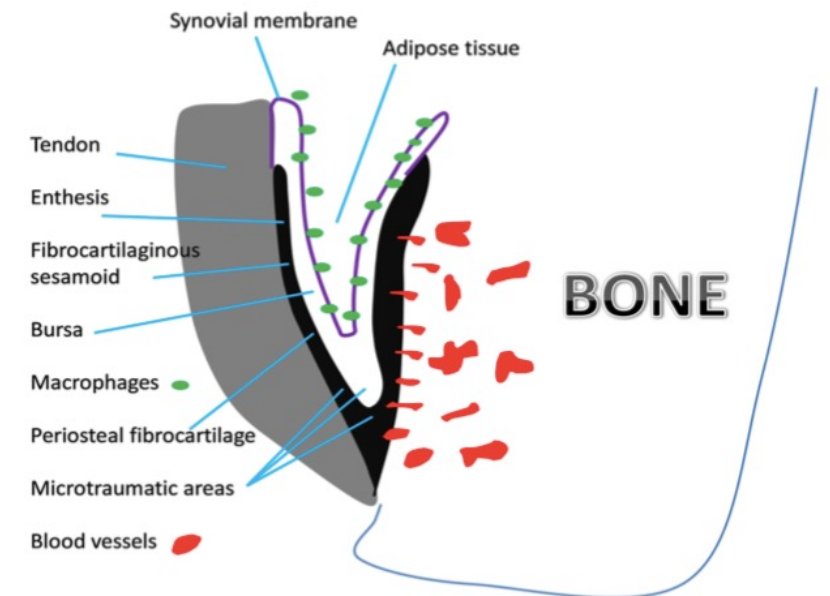
	Overall (n = 82)	Early OA (n = 36)	Advanced OA (n = 46)
Intra-ligament hypersignal	43 (52)	5 (14)	38 (83)
Peri-ligament hypersignal	79 (96)	33 (92)	46 (100)
Bone marrow edema	46 (56)	10 (28)	36 (78)
Bursitis	10 (12)	1 (3)	9 (20)
Enthesal thickening	31 (38)	6 (17)	25 (54)
Osteophyte	67 (81)	21 (58)	46 (100)
Bone erosion	5 (6)	0 (0)	5 (11)
Intra-ligament hypersignal on T1w	21 (26)	2 (6)	19 (41)



Enthesis Organ Concept^{3, 5)}

~Synovio-Enthesal Complex (SEC)~

- Enthesis and its surrounding tissues function like an organ
- SEC are associated with the presence of age-related microdamage in healthy subjects.
- SEC is closely involved in the etiology of synovitis in osteoarthritis
- Knee MCL complex function as a SEC
- Neovascularization for normal tissue repair of microdamage and degeneration of ligament and tendon attachments promotes infiltration of inflammatory cells into periarticular tissues, further promoting periarti



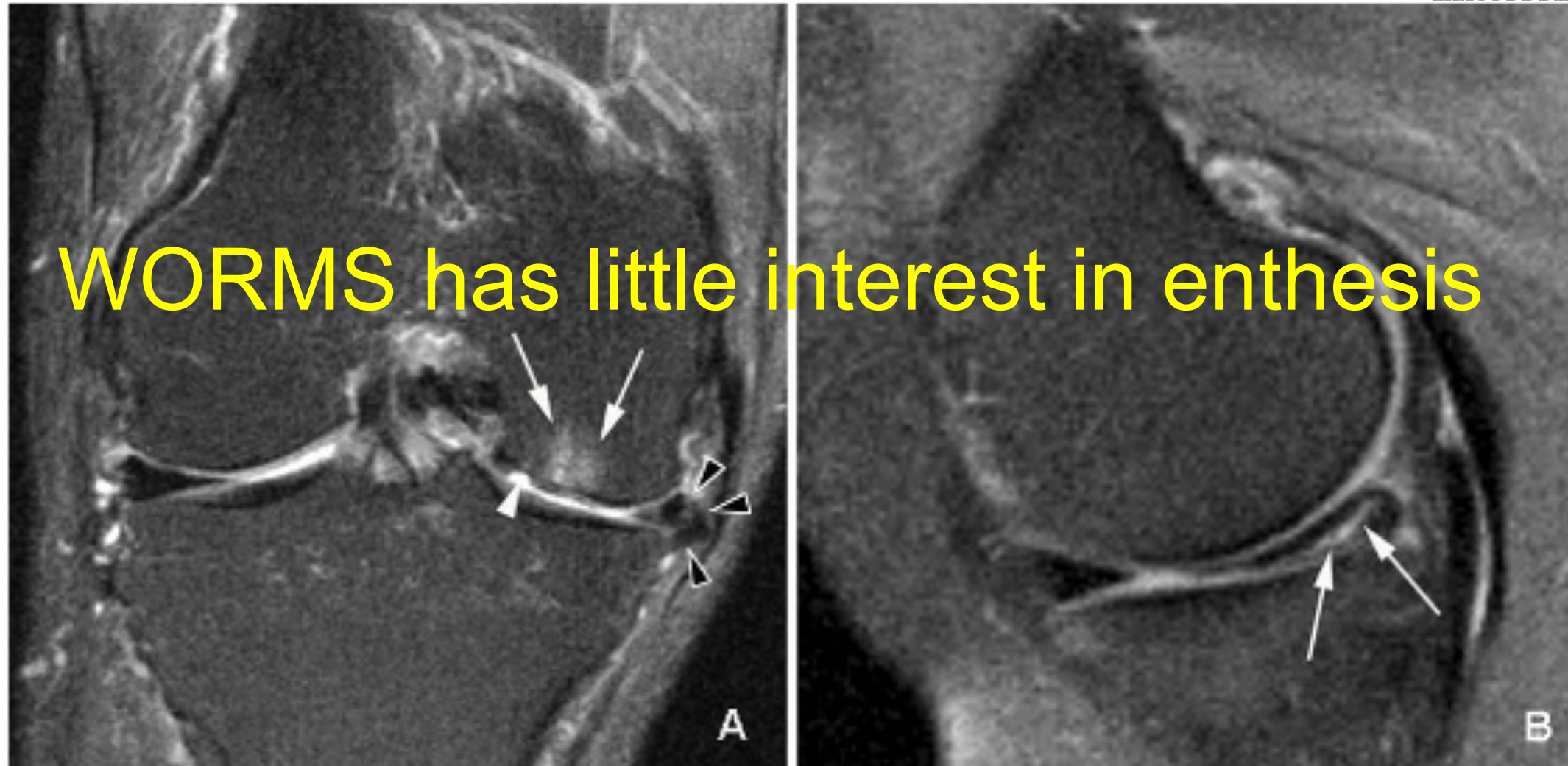
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Pathophysiological analysis of early knee OA⁴⁾

MRI features	Overall (n=710)
Any abnormality	631 (89)
Osteophytes	524 (74)
Cartilage damage	492 (69)
Bone marrow lesions	371 (52)
Synovitis	259 (37)
Attrition	228 (32)
Subchondral cysts	179 (25)
Meniscal lesions	167 (24)
Ligamentous lesions	66 (9)



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MCL complex pathology in early knee OA

Peri-ligament hypersignal was the most common abnormal MRI finding in the MCL complex in the early knee OA



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Reference

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Conclusion

Inflammation of the medial collateral ligament complex may be one of the etiologies of early osteoarthritis of the knee.



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