Case study: knee injury treatment

Short case summary : 25 years old, female injured her right knee during basketball game. PCP evaluated her, gave her non-steroidal anti-inflammatory with P. T referral. Patient came 2 days after injury, with knee swelling and locking. . Patient pain and mechanism of injury are consistent with a medial meniscus injury.

Diagnostic test : McMurray's test, was Positive with palpable click.

Reliability of McMurray's test : Evans ET. al [1] demonstrated a low level of agreement between the two examiners with inter-tester agreements ranging from *poor* for reproduction of a medial sensation (Kappa = âˆ'0. 10) to *fair* (K = +0. 38) for lateral pain.

Validity of McMurray's test : shortage of statistics in the literature increased the risk that the positive test criteria can change the test outcome, irrespective of whether the test was performed in the same manner on the same patient. [1]

I will change my first choice . McMurray's testalone is weak diagnostic tool for medial meniscus injury, the review [2] has demonstrated that the inter-tester reliability and sensitivity (sensitivity ranged from 27% to 70%, specificity figures (29-96%) of the McMurray's test is relatively low.

Another reading meta-analysis [3] , supported to use joint line tenderness test, McMurray's test, and Apley's test. I will add the other two tests to get strong diagnostic evidence for medial meniscus injury. Three special tests-McMurray's, joint line tenderness (JLT), and Apley's were included in the meta-analysis. Sensitivity of McMurray's test is 70. 5 (95% CI: 67. 4 to 73. 4)

and it’s specificity of 71. 1 (95% CI: 69. 3 to 72. 9). Joint line tenderness sensitivity of 63. 3 (95% CI: 60. 9 to 65. 7) and it’s specificity of 77. 4 (95% CI: 75. 6 to 79. 1). Sensitivity of Apley’s test is 60. 7 (95% CI: 55. 7 to 65. 5) and it’s specificity of 70. 2 (95% CI: 68. 0 to 72. 4).

Another reading [4] supported Thessaly’ Test at5 and 20 degrees (Evidence obtained from high quality randomized controlled trials, prospective studies, or diagnostic studies).

Intervention : therapeutic exercises to restore muscular strength and aerobic fitness. I found two evidences for therapeutic exercise intervention. I think both are strong evidences. First one [4] :

The supervised exercise group was significantly better than the home-based group regarding Sports Activity Rating scale and hop tests(Evidence level B). the same guidelines recommendedthat, Clinicians should consider a clinic-based exercise program in patients following arthroscopic meniscectomy to increase quadriceps strength and functional performance(Evidence level B).

The second evidence [5] was meta-analysis and systematic review reported that: No studies described the effectiveness of exercise therapy compared to no exercise therapy in non-surgical patients with a meniscal lesion.

I will not change my previous decisionabout therapeutic exercise as the main choice intervention for two reasons: First, the clinical guidelines support that choice with level B evidence.

Second reason: although the second study is systematic review, meta-analysis study

It didn’t introduce a strong alternative to my choice.

Outcome measure: lower extremity function scale(LEFS SCALE): The test evaluate the impairment of a patient with lower extremity musculoskeletal condition or disorders. Test measures initial function, progress of function, and outcome to design functional goals. In my case I use the LEFS for medial meniscus injury outcomes. Questionnaire is asked about 4 level of performance in 20 task questions that patient perform in daily life. Minimal score is 0(complete disability) and maximum score is 80(complete functional level)

Minimal DetectableChange (MDC) [6] : Various Lower Extremity Injuries (medial meniscus injury): MDC= 9 points. Minimally Clinically Important Difference (MCID) [6] : Various Lower Extremity Injuries: MCID = 9 points.

According to, Binkley ET al [6] . The LEFSisvalid compared to the SF-36 in target population, and reliable. The LEFS Sensitivity to outcome change was higher than the SF-36 in this population. The LEFS is applicable for clinical situations for individual patients and research.

LEFS SCALE reliability: *Test-retest Reliability* , Various Lower Extremity Injuries: Excellent test-retest reliability for the entire sample (r = 0. 86; 95% lower limit CI = 0. 80) [6] .

Interrater/Intra-rater Reliability: Various Injuries of Lower Extremity: Excellent interrater reliability (r = 0. 84) [6]

LEFS SCALE validity: Construct Validity: Various Lower Extremity Injuries: Excellent correlations between the LEFS scores and the SF-36 physical function subscale and physical component summary scores (r = 0. 80; 95% lower limit CI=. 73) and (r = 0. 64; 95% lower limit CI = 0. 54), Poor correlation between the LEFS scores and the SF-36 mental component summary scores (r = 0. 30; 95% lower limit CI = 0. 14) [6]

Another referencereported that, Lower Extremity Functional Scale may be an alternative to the Western Ontario and McMaster Universities Osteoarthritis Index physical function scale.

I will not change the outcomes measurement (LEFS)for knee injuries, I personally, prefer LEFS scale for its ease way and quick appliance to the patient. More than one strong study support high evidence, validity and reliability of LEFS. : The LEFS has good measurement properties: test- retest reliability and cross-sectional construct validity and it could be an alternative to WOMAC-PF

If I changethe outcomes measure I’ll use Western Ontario and McMaster Universities Osteoarthritis Index(WOMAC). Comparison between WOMAC scale and LEFS scale showed approximate results of strong evidence according to validity and reliability to the both scales.

References:

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