Bingol U, Altan L, Yurtkuran M. Low-Power Laser Treatment for Shoulder Pain. Photomedicine and Laser Surgery 2005;23:459-464.

Design: Randomized clinical trial

Population/sample size/setting:

- 40 patients (31 women, 9 men, mean age 60.5) with 3 months of shoulder pain aggravated by motion in university setting in Turkey
- Excluded if they had arthritis, polymyalgia rheumatica, cervical spondylosis, history of shoulder dislocation/fracture/deltoid surgery/rotator cuff rupture, steroid therapy in past 6 months, neurological problems

Main outcome measures:

- Randomized to 2000 Hz laser therapy for 1 minute at 5 locations: greater and lesser tuberosities, bicipital groove, anterior and posterior faces of shoulder capsule (n=20) or placebo laser in same manner (n=20), done 10 times in 2 weeks
- Baseline measures were pain VAS, palpation sensitivity, algometric sensitivity, and active/passive range of motion (ROM) for flexion, abduction, extension, internal/external rotation, adduction
- Both groups received supervised exercise program of 15 minutes after each laser or sham laser session
- Repeat measurements at 2 weeks showed no change in pain VAS, but both groups improving with most measures of ROM
    - For laser group, mean VAS at baseline was 6.10 and at 2 weeks was 5.65; for placebo laser the VAS scores were 6.17 and 5.96
- Laser group had greater improvement than control group for palpation sensitivity, scored as either present or absent with manual pressure of 4 kg, and in passive extension ROM
- Both groups tolerated treatment well with no adverse reactions

Authors' conclusions:

- Laser shows few advantages over sham laser for nonspecific shoulder pain
- Study of laser treatment needs standardization of applications and outcome measurements

Comments:

- Measurements of shoulder functionality also need to be done
- Study power not stated, but size may have been too small to detect moderate effect of laser over placebo
- Two week period of observation is the only followup measurement done; this is not enough followup time to assess the effectiveness of the interventions, but fails to show a short-term benefit of laser
- Passive extension range of motion was the only ROM measure with a difference between laser and placebo; since there were 12 measures of passive and active ROM, and there is no mention of correction of p values for

multiple testing, that ROM difference is likely to be attributable to chance and not to a benefit of laser treatment

- Table 1 shows balance of pretreatment variables between groups, but does not show that women may have been assigned to placebo group more than would be expected by chance ($p=0.04$ by binomial distribution formula)

Assessment: Although satisfactory in methodology and execution, study is inadequate for evidence for or against low level laser for shoulder pain (functional scores not measured; not enough subjects to show ineffectiveness of laser convincingly); does not support use of low level laser for shoulder pain