



Vitamin D and Calcium in the treatment of sub-acute and chronic back pain

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Abstract

Summary: Up to 84 percent of adults have low back pain at some time in their lives

Patients and method: All Patients of either gender, aged 18 – 75 years with CLBP for 6 weeks, attending Baqoba general hospital department of orthopedics or physiotherapy were included. The study period extend from January 2010 to January 2018.

Results: After treatment for six months there were substantial improvement in both groups in the Pain visual analogous scale (VAS), but with similar magnitude in both groups. There were no statically significant difference between treatment and control group in Pain visual analogous scale (VAS).

Discussions and conclusions: Giving the lack of therapeutic effects and the potential for long term toxicity and increase cost, we recommend against treatment with vitamin D and calcium in patients with chronic back pain

Keywords: vitamin D and calcium, chronic back pain, Pain visual analogous scale.

Introduction

Up to 84 percent of adults have low back pain at some time in their lives [1,2]. The long-term outcome of low back pain is generally favorable. In one prospective study, 90 percent of patients with low back pain seen initially in primary care did not seek care after three months [3,4]. However, given how common low back pain is, persistent symptoms affect millions of individuals. Subacute low back pain is commonly defined as back pain lasting between 4 and 12 weeks and chronic low back pain as pain that persists for 12 or more weeks.

Most patients (>85 percent) who are seen in primary care have "nonspecific low back pain," which is low back pain that cannot reliably be attributed to a specific disease or spinal pathology [5,6,7]. Rapid

improvement in pain and disability and return to work are the norm in the first month [8].

Patients and Methods

All Patients of either gender, aged 18 – 75 years with CLBP for 6 weeks, attending Baqoba general hospital department of orthopedics or physiotherapy were included. The study period extend from January 2010 to January 2018.

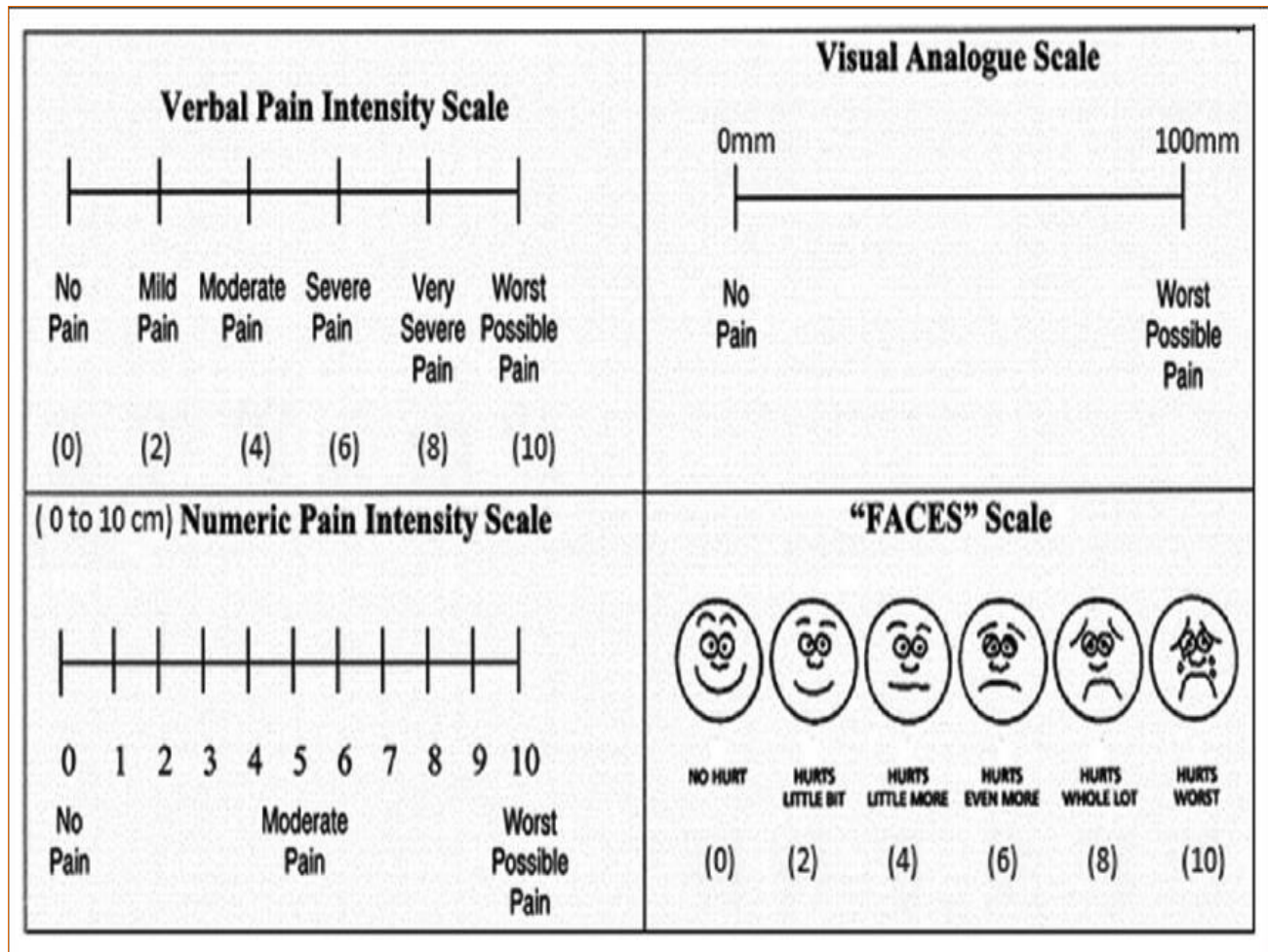
Exclusion Criteria Patients were excluded if they had evidence of other causes for neuropathy and painful conditions like diabetes mellitus; rheumatoid arthritis; symptomatic osteoarthritis of the hip, knee, and ankle; epilepsy; psychiatric diseases and substance abuse;

metabolic bone disease (hypo- or hyperparathyroidism); chronic renal disease, medical or surgical disorders affecting vitamin D metabolism (gastric surgery, chronic liver disease, renal failure, intestinal malabsorption, systemic infection, cancers etc.). Patients consuming drugs altering bone metabolism like corticosteroid or bisphosphonates and pregnant and lactating mothers and women intending pregnancy were also excluded.

The patients were randomly divided into 2 similar groups, one will receive guidelines based therapy with NSAIDs and back stretching exercise, and same therapy plus vitamin D and calcium combined pills. Pain visual analogous scale (VAS) were used to assess

response before treatment and after six months(9,10,11) . The VAS consists of a 100 mm horizontal line with the words "no pain" and "worst possible pain" placed at left and right hand extremes of the line, respectively. The numerical scale (NS) consists of figures 1–100 on a 100 mm horizontal line, 0 represented "no pain" and 100 worst pain ever. The patients were asked to place a vertical mark through the scales as appropriate for them at the moment. The patients were asked to choose a word to describe their pain from "no pain," "mild pain," "moderate pain," "severe pain," "very severe pain," and "worst possible pain" in the VRS. An appropriate smiley face from the faces pain scale (FPS) index was chosen by the patients [Figure 1].

Figure 1 VAS



Results

Finally we collect a total 300 patients, with 150 patients in each group, with similar demographic and biochemical characters (table 1). After treatment for

six months there were substantial improvement in both groups in the Pain visual analogous scale (VAS), but with similar magnitude in both groups. There were no statically significant difference between treatment and control group in Pain visual analogous scale (VAS).

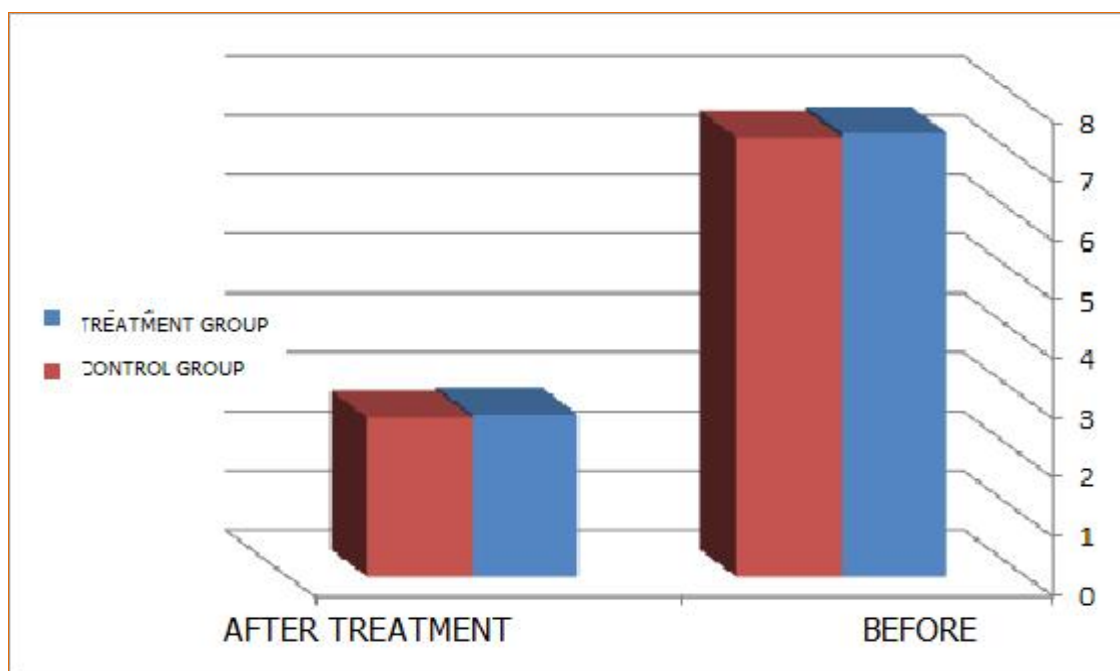
Table 1: treatment' and control demographic parameters

	Treatment group	control	P value
Age	41+/-14.7	41+/-14.8	0.7
Sex F/M%	68.91%	70%	0.5
BMI	36.7+/-17.9	34.5+/-18.1	0.4
VAS, Visual Analogue Scale	7.42 +/- 1.65	7.49 +/- 1.71	0.14
S.calicium(mg/dl)	9.5+/-1.1	9.5+/-1.2	0.43
Alk. Phosph.(iu/l)	90.7+/-31	89.9+/-32	0.27
Parathyroid hormone (pg/mL)	35.5+/-13.3	35.4+/-13.5	0.46
S.Vit.D3	17.8+/-7.8	17.9+/-7.7	0.17

Table 2 Visual Analogue Scale before and after treatment.

	Visual Analogue Scale before treatment	Visual Analogue Scale after 6 months	P value
Control group	7.49 +/- 1.71	2.74+/- 1.23	0.0003
Vitamin D group	7.42 +/- 1.65	2.69+/- 1.47	0.0004

Figure 2: Pain Visual Analogue Scale



Discussion and Conclusions

Our data showed that treatment with vitamin D and calcium does not increase the cure rate but it increase the cost substantially.

Recent systematic reviews and meta-analysis have synthesized evidence from experimental trials using vitamin D therapeutically for the treatment of chronic pain. A 2015 Cochrane review identified ten studies meeting their criteria of double-blind trials of using vitamin D supplementation compared with placebo or

active comparators for the treatment of chronic painful conditions.(11) Included studies were found be methodologically of low quality, as well as heterogeneous, that is, varying by painful chronic condition, dosing of vitamin D, and outcome measures investigated.⁴¹ Findings from other systematic reviews have also reached the same conclusions, that there is moderate level of evidence that vitamin D supplementation was not helpful for treating chronic nonspecific musculoskeletal pain patients⁴² and inconclusive evidence of a definitive positive effect of vitamin D on chronic pain states.(11-15).

Growing evidence suggests an association of chronic pain with low levels of vitamin D, latitude and season of the year. Vitamin D plays an important role in the immune system.(16–17). Regulation of inflammatory cytokines by vitamin D may be correlated with chronic pain conditions. However, there are conflicting data about the association of low levels of vitamin D and chronic pain, for example, CLBP.(16–19) Furthermore, the effect of vitamin D administration on improvement of chronic pain has been demonstrated in some studies.(20–29). But there is a disparity in the effect of treatment with vitamin D between randomized and double-blind clinical trials in comparison to studies of other designs.(17-36).

Giving the lack of therapeutic effects and the potential for long term toxicity and increase cost, we recommend against treatment with vitamin D and calcium in patients with chronic back pain.

References

- 1.Deyo RA, Tsui-Wu YJ. Descriptive epidemiology of low-back pain and its related medical care in the United States. *Spine (Phila Pa 1976)* 1987; 12:264.
- 2.Cassidy JD, Carroll LJ, Côté P. The Saskatchewan health and back pain survey. The prevalence of low back pain and related disability in Saskatchewan adults. *Spine (Phila Pa 1976)* 1998; 23:1860.
- 3.Chou R. In the clinic.Low back pain. *Ann Intern Med* 2014; 160:ITC6.
- 4.Deyo RA, Rainville J, Kent DL. What can the history and physical examination tell us about low back pain? *JAMA* 1992; 268:760.
- 5.Hoy D, Bain C, Williams G, et al. A systematic review of the global prevalence of low back pain. *Arthritis Rheum* 2012; 64:2028.
- 6.Deyo RA, Mirza SK, Martin BI. Back pain prevalence and visit rates: estimates from U.S. national surveys, 2002. *Spine (Phila Pa 1976)* 2006; 31:2724.
- 7.Skovron ML, Szpalski M, Nordin M, et al. Sociocultural factors and back pain. A population-based study in Belgian adults. *Spine (Phila Pa 1976)* 1994; 19:129.
- 8.Papageorgiou AC, Croft PR, Ferry S, et al. Estimating the prevalence of low back pain in the general population. Evidence from the South Manchester Back Pain Survey. *Spine (Phila Pa 1976)* 1995; 20:1889.
9. Scott J, Huskisson EC. Graphic representation of pain.*Pain* 1976; 2: 175–84.
- 10.Rodriguez CS. Pain measurement in the elderly: A review. *Pain ManagNurs* 2001;2:38-46.
- 11.Hockenberry MJ, Wilson D, Winkelstein ML. *Wong's Essentials of Pediatric Nursing*. 7th ed. St. Louis, MO: Mosby; 2005. p. 1259.
- 12.. Straube S, Derry S, Moore RA. Vitamin D for the treatment of chronic painful conditions in adults. *Cochrane Database Syst Rev* 2015; 5: CD007771.
13. Gaikwad M, Vanlint S, Mittinity M, et al. Does vitamin D supplementation alleviate chronic nonspecific musculoskeletal pain? A systematic review and meta-analysis. *ClinRheumatol*. Epub ahead of print 9 February 2016. DOI: 10.1007/s10067-016-3205-1.
14. Shipton EE, Shipton EA. Vitamin D deficiency and pain: clinical evidence of low levels of vitamin D and supplementation in chronic pain states. *Pain Ther* 2015; 4: 67–87.
15. Kragstrup TW. Vitamin D supplementation for patients with chronic pain. *Scand J Primary Health Care* 2011; 29: 4–5.
- 16.7 Knutsen KV, Brekke M, Gjelstad S, Lagerlv P (2010) Vitamin D status in patients with musculoskeletal pain, fatigue and headache: a cross-sectional descriptive study in a multi-ethnic general practice in Norway. *Scand J Prim Health Care* 28 (3), 166–71.
- 17.Kjærgaard M, Eggen AE, Mathiesen EB, Jorde R (2012) Association between headache and serum 25-hydroxyvitamin D; the Troms Study: tromsø 6. *Headache. J Head Face Pain* 52 (10), 1499–505.
18. Saps M, Blank C, Khan S et al. (2008) Seasonal variation in the presentation of abdominal pain. *J PediatrGastroenterolNutr* 46 (3), 279–84.
- 19.Turner MK, Hooten WM, Schmidt JE, Kerkvliet JL, Townsend CO, Bruce BK (2008) Prevalence and clinical correlates of Vitamin D inadequacy among patients with chronic pain. *Pain Med* 9 (8), 979–84.
- 20.Kamen DL, Tangricha V (2010) Vitamin D and molecular action on the immune system: modulation of innate and autoimmunity. *J Mol Med* 88 (5), 441–5. 12 Hewison M (2010) Vitamin D and the immune system: new perspective on old theme. *EndocrinolMetabClin North Am* 39 (2), 365–79.
- 21.Holick MF (2007) Vitamin D deficiency. *N Engl J Med* 357 (3), 266–81. 14 Block SR (2004) Vitamin D deficiency is not associated with nonspecific musculoskeletal pain syndromes including fibromyalgia. *Mayo ClinProc* 79 (12), 1585–6.

22. De la Jara GDT, Pecoud A, Favrat B (2004) Musculoskeletal pain in female asylum seekers and hypovitaminosis D3. *BMJ* 329 (7458), 156–7.
23. Atherton K, Berry DJ, Parsons T, Macfarlane GJ, Power C, Hypponen E (2009) Vitamin D and chronic widespread pain in a white middle-aged British population: evidence from a cross-sectional population survey. *Ann Rheum Dis* 68 (6), 817–22.
24. Helliwell PS, Ibrahim GH, Karim Z, Sokoll K, Johnson H (2006) Unexplained musculoskeletal pain in people of South Asian ethnic group referred to a rheumatology clinic – relationship to biochemical osteomalacia, persistence over time and response to treatment with calcium and vitamin D. *ClinExpRheumatol* 24 (4), 424–7.
25. Plotnikoff GA, Quigley JM (2003) Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. *Mayo ClinProc* 78 (12), 1463–70.
26. Schwalfenberg G (2009) Improvement of chronic back pain or failed back surgery with vitamin D repletion: a case series. *J Am Board Fam Med* 22 (1), 69–74.
27. Lyritis GP, Androulakis C, Magiasis B, Charalambaki Z, Tsakalagos N (1994) Effect of nandrolonedecanoate and 1-alpha-hydroxy-calciferol on patients with vertebral osteoporotic collapse. A double-blind clinical trial. *Bone Miner* 27 (3), 209–17.
28. Iwamoto J, Takeda T, Ichimura S, Matsu K, Uzawa M (2003) Effects of cyclical etidronate with alfacalcidol on lumbar bone mineral density, bone resorption, and back pain in postmenopausal women with osteoporosis. *J OrthopSci* 8 (4), 532–7.
29. Warner AE, Arnsperger SA (2008) Diffuse musculoskeletal pain is not associated with low vitamin D levels or improved by treatment with vitamin D. *J ClinRheumatol* 14 (1), 12–6.
30. Al Faraj S, Al Mutairi K (2003) Vitamin D deficiency and chronic low back pain in Saudi Arabia. *Spine* 28 (2), 177–9.24 Grove O, Halver B (1981) Relief of osteoporotic backache with fluoride, calcium, and calciferol. *Acta Med Scand* 209 (1–6), 469–71.
31. Abbasi M, Hashemipour S, Hajmanuchehri F, Kazemifar AM (2012) Is vitamin D deficiency associated with non specific musculoskeletal pain? *Glob J Health Sci* 5 (1), 107.
32. Sakalli H, Arslan D, Yucel AE (2012) The effect of oral and parenteral vitamin D supplementation in the elderly: a prospective, double-blinded, randomized, placebo-controlled study. *RheumatolInt* 32 (8), 2279–83.
33. Plotnikoff G, Dusek J (2012) Vitamin D sufficiency is necessary for integrative treatment-associated improvements in chronic pain status. *BMC Complement Altern Med* 12 (Suppl 1), 120.
34. Wandless I, Jarvis S, Evans JG, Aird EG, Stevens J (1980) Vitamin D3 in osteoporosis. *Br Med J* 280 (6227), 1320.
35. Straube S, Moore RA, Derry S, McQuay HJ (2009) Vitamin D and chronic pain. *Pain* 141 (1), 10–13.
36. Vieth R, Bischoff-Ferrari H, Boucher BJ et al. (2007) The urgent need to recommend an intake of vitamin D that is effective. *Am J ClinNutr* 85 (3), 649–50.

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