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Evaluating the safety and short-term equivalence of colchicine versus prednisone in older patients with acute calcium pyrophosphate crystal arthritis (COLCHICORT): an open-label, multicentre, randomised trial

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Summary

Background

Acute calcium pyrophosphate crystal arthritis causes intense joint pain mainly affecting older people. Because guidance and evidence remain scarce, management of this disease relies on expert opinion. We therefore aimed to compare the safety and short-term equivalence of low-dose colchicine with oral prednisone in older patients with acute calcium pyrophosphate crystal arthritis.

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We did an open-label, multicentre, randomised, trial (COLCHICORT) at six hospitals in Paris and northern France. We enrolled patients who were admitted to hospital who were 65 years or older and who presented with acute calcium pyrophosphate crystal arthritis with a symptom duration of less than 36 h. Diagnosis of calcium pyrophosphate crystal arthritis was made by the identification of calcium pyrophosphate crystals on synovial fluid analysis or typical clinical presentation (onset of joint pain and swelling). Key exclusion criteria included absence of calcium pyrophosphate crystals on synovial fluid analysis or a history of gout. Participants were randomly allocated (1:1), using a prednisone group). The primary outcome was change in joint pain (measured by visual analogue scale [VAS] from 0 mm to 100 mm) at 24 h. Equivalence was determined whether the 95% CI of the between-group difference at 24 h was within the –13 mm to +13 mm margin in the per-protocol analysis. Adverse events were recorded using the National Cancer Institute Common Terminology Criteria for Adverse Events (version 4.0). This trial is completed and is registered with ClinicalTrials.gov, NCT03128905.

Findings

Between Feb 5, 2018, and May 7, 2022, 111 patients who were admitted to hospital were randomly assigned (57 [51%] to the colchicine group and 54 [49%] to the prednisone group). 95 (86%) of 111 patients were included in the per-protocol analysis (49 [52%] in the colchicine group and 46 [48%] in the prednisone group). The median age was 88·0 years (IQR 82·0–91·0) and 69 (73%) of 95 participants were women and 26 (27%) were men. Acute calcium pyrophosphate crystal arthritis affected mainly the knee in 46 (48%) of 95 participants, the wrist in 19 (20%), and the ankle in 12 (13%). Pain VAS at baseline was 68 mm (SD 17). At 24 h, change in pain VAS was –36 mm (SD 32) in the colchicine group and –38 mm (SD 23) in the prednisone group. The between-group difference in change in pain VAS at 24 h was –1 mm (95% CI –12 to 10), showing equivalence between the two drugs. In the colchicine group, 12 (22%) of 55 patients had diarrhoea, one (2%) had hypertension, and none had hyperglycaemia. In the prednisone group, three (6%) of 54 had diarrhoea, six (11%) had hypertension, and three (6%) had hyperglycaemia. No deaths occurred in the colchicine group; two deaths occurred in the prednisone group, which were deemed unrelated to prednisone (one due to infectious valvular endocarditis leading to heart failure, and one due to a stroke).

Interpretation

Colchicine and prednisone exhibit equivalent short-term efficacy for the treatment of acute calcium pyrophosphate crystal arthritis, with different safety profiles in the older population.

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References

1. Rosenthal AK • Ryan LM

Calcium pyrophosphate deposition disease.

N Engl J Med. 2016; **374**: 2575-2584

View in Article

Scopus (207) • PubMed • Crossref • Google Scholar

2. McCarthy GM • Dunne A

Calcium crystal deposition diseases—beyond gout.

Nat Rev Rheumatol. 2018; **14**: 592-602

View in Article

Scopus (73) • PubMed • Crossref • Google Scholar

Joint Bone Spine. 2015; **82**: 326-329

View in Article

Scopus (15) • PubMed • Crossref • Google Scholar

4. Ho Jr, G • DeNuccio M

Gout and pseudogout in hospitalized patients.

Arch Intern Med. 1993; **153**: 2787-2790

View in Article

PubMed • Crossref • Google Scholar

5. Tedeschi SK • Huang W • Yoshida K • Solomon DH

Risk of cardiovascular events in patients having had acute calcium pyrophosphate crystal arthritis.

Ann Rheum Dis. 2022; **81**: 1323-1329

View in Article

Scopus (3) • Crossref • Google Scholar

6. Parperis K • Papachristodoulou E • Kakoullis L • Rosenthal AK

Management of calcium pyrophosphate crystal deposition disease: a systematic review.

Semin Arthritis Rheum. 2021; **51**: 84-94

View in Article

Scopus (17) • PubMed • Crossref • Google Scholar

7. Zhang W • Doherty M • Pascual E • et al.

EULAR recommendations for calcium pyrophosphate deposition. Part II: management.

Ann Rheum Dis. 2011; **70**: 571-575

View in Article

Scopus (155) • PubMed • Crossref • Google Scholar

8. Abhishek A • Neogi T • Choi H • Doherty M • Rosenthal AK • Terkeltaub R

Unmet needs and the path forward in joint disease associated with calcium pyrophosphate crystal deposition.

Arthritis Rheumatol. 2018; **70**: 1182-1191

Scopus (37) • PubMed • Crossref • Google Scholar

9. Martinon F • Petrilli V • Mayor A • Tardivel A • Tschopp J

Gout-associated uric acid crystals activate the NALP3 inflammasome.

Nature. 2006; **440**: 237-241

View in Article

Scopus (3952) • PubMed • Crossref • Google Scholar

10. Janssens HJEM • Janssen M • van de Lisdonk EH • van Riel PLCM • van Weel C

Use of oral prednisolone or naproxen for the treatment of gout arthritis: a double-blind, randomised equivalence trial.

Lancet. 2008; **371**: 1854-1860

View in Article

Scopus (257) • PubMed • Summary • Full Text • Full Text PDF • Google Scholar

11. Rainer TH • Cheng CH • Janssens HJ • et al.

Oral prednisolone in the treatment of acute gout: a pragmatic, multicenter, double-blind, randomized trial.

Ann Intern Med. 2016; **164**: 464-471

View in Article

Scopus (69) • PubMed • Crossref • Google Scholar

12. Terkeltaub RA • Furst DE • Bennett K • Kook KA • Crockett RS • Davis MW

High versus low dosing of oral colchicine for early acute gout flare: twenty-four-hour outcome of the first multicenter, randomized, double-blind, placebo-controlled, parallel-group, dose-(ris colchicine study.

Arthritis Rheum. 2010; **62**: 1060-1068

View in Article

Scopus (401) • PubMed • Crossref • Google Scholar

13. Abhishek A

Calcium pyrophosphate deposition disease: a review of epidemiologic findings.

View in Article

Scopus (46) • PubMed • Crossref • Google Scholar

14. Tedeschi SK • Pascart T • Latourte A • et al.

Identifying potential classification criteria for calcium pyrophosphate deposition disease (CPPD): item generation and item reduction.

Arthritis Care Res. 2022; **74**: 1649-1658

View in Article

Scopus (18) • Crossref • Google Scholar

15. Sirotti S • Becce F • Sconfienza LM • et al.

Reliability and diagnostic accuracy of radiography for the diagnosis of calcium pyrophosphate deposition: performance of the novel definitions developed by an international multidisciplinary working group.

Arthritis Rheumatol. 2023; **75**: 630-638

View in Article

Scopus (5) • PubMed • Crossref • Google Scholar

16. Cipolletta E • Filippou G • Scire CA • et al.

The diagnostic value of conventional radiography and musculoskeletal ultrasonography in calcium pyrophosphate deposition disease: a systematic literature review and meta-analysis.

Osteoarthritis Cartilage. 2021; **29**: 619-632

View in Article

Scopus (29) • PubMed • Summary • Full Text • Full Text PDF • Google Scholar

17. Filippou G • Scire CA • Adinolfi A • et al.

Identification of calcium pyrophosphate deposition disease (CPPD) by ultrasound: reliability of the OMERACT definitions in an extended set of joints-an international multiobserver study by the OMERACT Calcium Pyrophosphate Deposition Disease Ultrasound Subtask Force.

Ann Rheum Dis. 2018; **77**: 1194-1199

View in Article

PubMed • Google Scholar

Comparison of ultrasonography and radiography of the wrist for diagnosis of calcium pyrophosphate deposition.

Joint Bone Spine. 2017; **85**: 615-618

View in Article

Scopus (23) • PubMed • Crossref • Google Scholar

19. Cipolletta E • Filippucci E • Abhishek A • et al.

In patients with acute mono-oligoarthritis, a targeted ultrasound scanning protocol shows great accuracy for the diagnosis of gout and CPPD.

Rheumatology. 2022; **62**: 1493-1500

View in Article

Scopus (9) • Crossref • Google Scholar

20. Terkeltaub RA • Furst DE • Digiacinto JL • Kook KA • Davis MW

Novel evidence-based colchicine dose-reduction algorithm to predict and prevent colchicine toxicity in the presence of cytochrome P450 3A4/P-glycoprotein inhibitors.

Arthritis Rheum. 2011; **63**: 2226-2237

View in Article

Scopus (184) • PubMed • Crossref • Google Scholar

21. Todd KH • Funk KG • Funk JP • Bonacci R

Clinical significance of reported changes in pain severity.

Ann Emerg Med. 1996; **27**: 485-489

View in Article

Scopus (855) • PubMed • Summary • Full Text • Full Text PDF • Google Scholar

22. Man CY • Cheung IT • Cameron PA • Rainer TH

Comparison of oral prednisolone/paracetamol and oral indomethacin/paracetamol combination therapy in the treatment of acute goutlike arthritis: a double-blind, randomized, controlled trial.

Ann Emerg Med. 2007; **49**: 670-677

View in Article

Scopus (142) • PubMed • Summary • Full Text • Full Text PDF • Google Scholar

Reporting of noninferiority and equivalence randomized trials: extension of the CONSORT 2010 statement.

JAMA. 2012; **308**: 2594-2604

View in Article

Scopus (870) • PubMed • Crossref • Google Scholar

24. Rothschild B • Yakubov LE

Evidence for an effect of hydroxychloroquine in chronic pyrophosphate deposition disease.

J Clin Rheumatol. 1996; **2**: 170

View in Article

Scopus (5) • PubMed • Crossref • Google Scholar

25. Finckh A • McCarthy GM • Madigan A • et al.

Methotrexate in chronic-recurrent calcium pyrophosphate deposition disease: no significant effect in a randomized crossover trial.

Arthritis Res Ther. 2014; **16**: 458

View in Article

Scopus (37) • PubMed • Crossref • Google Scholar

26. Tabatabai MR • Cummings NA

Intravenous colchicine in the treatment of acute pseudogout.

Arthritis Rheum. 1980; **23**: 370-374

View in Article

Scopus (23) • PubMed • Crossref • Google Scholar

27. Spilberg I • McLain D • Simchowitz L • Berney S

Colchicine and pseudogout.

Arthritis Rheum. 1980; **23**: 1062-1063

View in Article

Scopus (17) • PubMed • Crossref • Google Scholar

J Rheumatol. 1986; **13**: 804-805

View in Article

PubMed • Google Scholar

29. Roddy E • Clarkson K • Blagojevic-Bucknall M • et al.

Open-label randomised pragmatic trial (CONTACT) comparing naproxen and low-dose colchicine for the treatment of gout flares in primary care.

Ann Rheum Dis. 2020; **79**: 276-284

View in Article

Scopus (33) • PubMed • Crossref • Google Scholar

30. Werlen D • Gabay C • Vischer TL

Corticosteroid therapy for the treatment of acute attacks of crystal-induced arthritis: an effective alternative to nonsteroidal antiinflammatory drugs.

Rev Rhum Engl Ed. 1996; **63**: 248-254

View in Article

PubMed • Google Scholar

31. Pascart T • Richette P

Colchicine in gout: an update.

Curr Pharm Des. 2018; **24**: 684-689

View in Article

Scopus (30) • PubMed • Crossref • Google Scholar

32. Davis MW • Wason S

Effect of steady-state atorvastatin on the pharmacokinetics of a single dose of colchicine in healthy adults under fasted conditions.

Clin Drug Investig. 2014; **34**: 259-267

View in Article

Scopus (18) • PubMed • Crossref • Google Scholar

Mo Med. 2014; **111**: 508-511

View in Article

PubMed • Google Scholar

34. Wongrakpanich S • Wongrakpanich A • Melhado K • Rangaswami J

A comprehensive review of non-steroidal anti-inflammatory drug use in the elderly.

Aging Dis. 2018; **9**: 143-150

View in Article

Scopus (441) • PubMed • Crossref • Google Scholar

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