COMPARING THE EFFECTIVENESS OF BIOLOGIC VS CONVENTIONAL DMARDS IN REDUCING RHEUMATOID ARTHRITIS DISEASE ACTIVITY

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BACKGROUND

- Rheumatoid arthritis (RA) is a disease caused by a long-term inflammatory autoimmune response accompanied by joint damage and disability (Rohit et al., 2022).
- Medications with Disease-modifying antirheumatic effects (DMARDs) help treat the disease at an early stage and stop its progression(Benjamin et al., 2019).
- There are two main classes of DMARDs- the biologic and the conventional synthetic (csDMARDs) (Prawjaeng et al., 2023).
- There is hardly any evidence that bDMARDs are more efficient than csDMARDs among patients with RA.

PURPOSE

- Analyze the effectiveness of biologics vs diseases-modifying anti-rheumatic drugs (DMARDs) expressed by progression in disease activity reduction at 6-12 months.

METHODS

- A systematic evidence review and meta-analysis of RCTs comparing biological to conventional synthetic DMARDs with the DAS28 score as the primary outcome measure at time zero and six to twelve-month follow-up.

Efficacy of Different DMARDs

Key Comparisons	Efficacy (Strength of Evidence)	Harms (Strength of Evidence)
Monotherapy vs. monotherapy		
Synthetic DMARDs		
Leflunomide vs. methotrexate	Similar ACR 20 or radiographic responses (Moderate) Greater improvement in functional status (HAQ-DI) and health-related quality of life (SF-36 physical component) for leflunomide (Moderate) Similar work productivity outcomes (Moderate)	No obvious major differences in adverse events and discontinuation rates (Moderate)
Leflunomide vs. sulfasalazine	Higher ACR 20 and ACR 50 response rates and greater improvement in functional capacity for leflunomide (Low) Similar radiographic responses (Low)	No obvious major differences in adverse events and discontinuation rates (Moderate)
Sulfasalazine vs. methotrexate	Similar ACR 20 response rates, disease activity scores, functional capacity, and radiographic responses (Moderate)	No obvious major differences in adverse events; more patients receiving methotrexate than sulfasalazine (Moderate)
Biological DMARDs		
Biological DMARDs vs. biological DMARDs		
Anti-TNF drugs (adalimumab, etanercept, infliximab) vs. anti-TNF drugs	Similar ACR 20 and ACR 50 response rates among anti-TNF drugs (Moderate)	Insufficient evidence (Low)
Biological DMARDs vs. biological DMARDs	3 indirect comparisons based on fair- and good-quality meta-analyses consistently showed anakinra to have lower ACR 20 and ACR 50 response rates than anti-TNF drugs as a class (Moderate)	Risk for injection site reactions higher for anakinra than for adalimumab and etanercept (Moderate)
Biological DMARDs vs. synthetic DMARDs		
Anti-TNF drugs vs. methotrexate	In patients with early RA, similar clinical response, functional capacity, and quality of life between adalimumab or etanercept and methotrexate; in patients receiving biological DMARDs, better radiographic outcomes than synthetic DMARDs (Moderate) In patients whose initial RA treatment failed, greater functional independence and remission for anti-TNF drugs as a class than synthetic DMARDs as a class (Moderate)	No obvious major differences in adverse events in efficacy studies (Low) Insufficient evidence on differences in the risk for rare but severe adverse events (Low)
Combination therapy vs. monotherapy		
Synthetic DMARDs vs. synthetic DMARDs		
Sulfasalazine plus methotrexate vs. monotherapy	In patients with early RA, similar ACR 20 response rates or radiographic changes (Moderate) In all patients, similar functional capacity (Moderate) In patients with early RA, significantly better disease activity scores with combination therapy (Low)	No obvious major differences in withdrawal rates attributable to adverse events (Moderate)
1, 2, or 3 synthetic DMARDs (methotrexate, sulfasalazine, hydroxychloroquine) plus prednisone vs. 1 synthetic DMARD	In patients receiving 1, 2, or 3 synthetic DMARDs plus prednisone, improved ACR 50 response rates, disease activity scores, and less radiographic progression (Moderate) In patients with early RA, significantly lower radiographic progression and fewer eroded joints (Low) Better outcomes with the combination strategies for functional capacity (Low for each individual comparison; moderate for combination therapy vs. monotherapy)	No obvious major differences in discontinuation rates (Moderate)
Biological DMARD combinations		
Biological DMARDs vs. biological DMARDs	No additional treatment effects from combination of etanercept plus anakinra compared with etanercept monotherapy (Low)	Substantially higher rates of serious adverse events from combination of 2 biological DMARDs than from monotherapy (Moderate)
Biological DMARDs plus methotrexate vs. biological DMARDs	Better clinical response rates, functional capacity, and quality of life from combination therapy with biological DMARDs plus methotrexate than from monotherapy with biological DMARDs (Moderate) In methotrexate-naive patients with early aggressive RA, better ACR 50 response, greater clinical remission, and less radiographic progression in the combination therapy group (Low)	No obvious, major differences in adverse events in efficacy studies (Low) Insufficient evidence on differences in the risk for rare but severe adverse events (Low)
Biological DMARDs plus synthetic DMARD other than methotrexate vs. biological DMARDs	Similar clinical response rates, functional capacity, and quality of life between etanercept plus sulfasalazine and etanercept monotherapy (Low)	No obvious, major differences in adverse events in efficacy studies (Low) Insufficient evidence on differences in the risk for rare but severe adverse events (Low)

RESULTS

- Patients given biologic DMDARs (bDMARDs) will display a higher drop in DAS28 scores compared to those treated with cDMARDs (csDMARDs).

CONCLUSIONS

- Biologic DMARDs will demonstrate to be more efficacious in removing disease activity than other conventional DMARDs in rheumatoid arthritis.

REFERENCES

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