Meta-analysis of association of dermatomyositis and polymyositis with cancer


CRD summary
This review concluded that age, gender, cutaneous necrosis, dysphagia, arthritis and lung complication could affect susceptibility to cancer in patients with dermatomyositis or polymyositis. These conclusions reflect the evidence and seem reliable; the authors' recommendations for further research are justified.

Authors' objectives
To evaluate the risk factors for malignancies in patients with dermatomyositis or polymyositis.

Searching
Seven databases (including PubMed, EMBASE, and The Cochrane Library) were searched until January, 2012. Search terms were reported. Ovid and SpringerLink were used to search the Internet. Reference lists of included studies were handsearched, and an author of a conference abstract was contacted.

Study selection
Eligible were cohort or retrospective case-control studies evaluating the association between the characteristics of interest and the risk of any malignant cancer. Studies had to include patients aged 18 years or older, with probable or diagnosed, dermatomyositis or polymyositis. Diagnosis had to be by Bohan and Peter criteria.

The included studies were conducted in Europe (none in the UK), Asia, or North America. Where reported, the mean age of patients by group ranged from 36 to 63 years. About a fifth of the included patients had cancer-associated myositis or cancer; the other patients did not have these diseases and were considered to be controls. The characteristics examined were age, gender, cutaneous necrosis, dysphagia, arthritis, interstitial lung disease, Gottron's sign, and antinuclear antibodies.

Two reviewers independently selected studies for inclusion; any discrepancies were resolved by a third reviewer.

Assessment of study quality
Study quality was assessed using the Newcastle-Ottawa Scale; a score over 6 was high, 4 to 6 was moderate, and less than 4 was low. The authors did not report how many reviewers assessed quality.

Data extraction
Cancer status and the patient characteristics were extracted. The extracted information had to be sufficient to calculate odds ratios or weighted mean differences, and 95% confidence intervals.

The number of reviewers who extracted the information was not reported.

Methods of synthesis
The effect estimates and 95% confidence intervals from individual studies were pooled using fixed-effect models. If significant heterogeneity was found (p<0.05 for Cochran's Q), random-effects models were used. Heterogeneity was also assessed using \( I^2 \) (>50% was considered significant).

Publication bias was assessed using Egger's test and Begg's funnel plots. Sensitivity analyses were performed for meta-analyses with significant heterogeneity, by removing one study at a time.

Results of the review
Twenty studies were included (380 cases; 1,575 controls); 18 were cohort studies and two were case-control studies. Studies were rated as high (14 studies) or moderate (six studies) quality.

The following characteristics were associated with a statistically significant, increased risk of cancer: older (WMD 11.41, 95% CI 9.84 to 12.98; 13 studies; \( I^2=26\% \)); male (OR 1.92, 95% CI 1.49 to 2.48; 18 studies; \( I^2=13\% \)); cutaneous
necrosis (OR 5.52, 95% CI 3.49 to 8.74; 10 studies; $I^2=49\%$); and dysphagia (OR 2.41, 95% CI 1.50 to 3.86; 12 studies; $I^2=56\%$).

Arthritis (OR 0.38, 95% CI 0.24 to 0.61; seven studies; $I^2=21\%$) and interstitial lung disease (OR 0.32, 95% CI 0.20 to 0.51; 10 studies; $I^2=22\%$) were associated with a statistically significant, reduced risk of cancer.

No other statistically significant associations were found, and none of the sensitivity analyses substantially changed any of the results. There was no evidence of publication bias.

**Authors' conclusions**
The data suggested that age, gender, cutaneous necrosis, dysphagia, arthritis and lung complication could influence susceptibility to cancer in patients with dermatomyositis or polymyositis.

**CRD commentary**
The review question and inclusion criteria were clearly defined and reproducible. Various databases (including unpublished literature) were searched and no language restrictions were mentioned, reducing the likelihood that any relevant studies were missed. It was unclear whether data extraction and quality assessment were performed by more than one person, so reviewer error and bias could have occurred.

Suitable quality assessment criteria were employed, and the results showed that the studies were of moderate to high quality. The statistical methods of synthesis seem to have been appropriate. The authors acknowledged that different diagnostic criteria were used for dermatomyositis, polymyositis, and cancer-associated myositis across the studies. They were unable to perform stratification and subgroup analyses due to insufficient data.

The authors' conclusions reflect the evidence presented and seem reliable; their recommendations for further research are justified.

**Implications of the review for practice and research**

**Practice**: The authors did not state any implications for clinical practice.

**Research**: The authors stated that large studies were needed to confirm this review's findings. Subgroup analyses were needed in future reviews.

**Funding**
No funding received.

**Bibliographic details**

**PubMedID**
23909921

**DOI**
10.1111/bjd.12564

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Age Factors; Case-Control Studies; Deglutition Disorders /etiology; Dermatomyositis /complications; Disease Susceptibility; Female; Humans; Male; Middle Aged; Necrosis; Neoplasms /etiology; Polymyositis /complications; Publication Bias; Retrospective Studies; Risk Factors; Sex Factors; Skin /pathology

**AccessionNumber**
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.