Usefulness of anti-p155 autoantibody for diagnosing cancer-associated dermatomyositis: a systematic review and meta-analysis

CRD summary
This review concluded that anti-p155 autoantibody determination was useful for diagnosing cancer-associated myositis and guiding disease management. While this conclusion appears appropriate, readers should note that it is based on a relatively small amount of heterogeneous evidence.

Authors' objectives
To determine the accuracy of anti-p155 autoantibody for diagnosing cancer-associated myositis in adults with dermatomyositis.

Searching
MEDLINE, EMBASE, The Cochrane Library, Web of Knowledge and Biblioteca Virtual en Salud databases were searched for studies published in any language from inception to April 2010. Search terms were reported. Article bibliographies, conference proceedings and other sources were handsearched to identify further relevant studies.

Study selection
Primary studies that evaluated anti-p155 antibody determination by immunoprecipitation assay with radiolabeled cell protein extracts in adult patients (over 18 years) with probable or definite dermatomyositis or amyopathic dermatomyositis were eligible for inclusion. Included studies also had to report the number of patients diagnosed with cancer.

Some included studies reported cancer-associated myositis according to prespecified criteria, while others simply reported malignancies. Mean follow-up time ranged from three to 4.5 years.

Two reviewers independently selected studies for inclusion, with any disagreements assessed by two further reviewers before reaching consensus.

Assessment of study quality
Methodological quality of included studies was assessed using the QUADAS tool. Two of the 14 items were dropped as they were considered inapplicable.

Two reviewers independently performed the assessment, with any disagreements assessed by two further reviewers before reaching consensus.

Data extraction
Key study characteristics and data required for the calculation of diagnostic accuracy statistics were extracted from the included studies.

It was not clear how many reviewers performed the extraction.

Methods of synthesis
Pooled sensitivities and specificities and associated 95% confidence intervals (CIs) of anti-p155 for diagnosing cancer-associated myositis were calculated using a bivariate model. Results were also presented as diagnostic odds ratios (OR), likelihood ratios, positive and negative predictive values and the summary receiver operating characteristic (SROC) curve. Statistical heterogeneity was quantified using $I^2$.

Publication bias and small sample bias were investigated using the regression method described by Deeks et al. (2005). Sensitivity analyses were also performed to test the robustness of the findings.
Results of the review
Six cohort studies (312 patients) were included in the review. All of these studies were considered to have a representative sample, a short enough period between reference standard and index test, an accurate description of the index test and reported uninterpretable/intermediate test results. Three studies met all 12 QUADAS quality criteria.

Pooled sensitivity of anti-p155 for diagnosing cancer-associated dermatomyositis was 78% (95% CI 45 to 94). Pooled specificity was 89% (95% CI 82 to 93). The diagnostic odds ratio was 27.3 (95% CI 6.6 to 112.8). The positive likelihood ratio was 6.79 (95 CI 4.11 to 11.23) and the negative likelihood ratio was 0.25 (95% CI 0.08 to 0.76). There was substantial statistical heterogeneity for all of these outcomes except the positive likelihood ratios. The area under the SROC curve was 0.91 (95% CI 0.88 to 0.93).

Using a pooled prevalence of 17%, anti-p155 had a positive predictive value of 58% and a negative predictive value of 95%.

There was no evidence of publication or small sample biases. Sensitivity analyses were also reported in the paper.

Authors’ conclusions
Anti-p155 autoantibody determination was useful for diagnosing cancer-associated myositis and guiding disease management.

CRD commentary
The research question in this review was supported by appropriate inclusion and exclusion criteria. Attempts were made to identify all the relevant evidence and steps were taken to avoid errors and bias in the selection of studies and assessment of quality. Included studies were quality-assessed and synthesised using established methods and the relevant data were presented in the paper. The authors’ conclusions appear appropriate, but readers should note that they were derived from a relatively small amount of statistically heterogeneous evidence.

Implications of the review for practice and research

Practice: The authors stated that intensive cancer screening could be useful in anti-p155 positive patients, with clinical follow-up, careful history taking and patient examination alongside routine cancer screening being a rational approach for anti-p155 negative patients.

Research: The authors stated that prospective studies were needed to compare the outcomes of their proposed less intensive cancer evaluation with more intensive screening approaches in anti-p155 negative patients.

Funding
Partially supported by the Spanish Ministry of Health and Consumer Affairs

Bibliographic details

PubMedID
21953614

DOI
10.1002/art.33379

Original Paper URL

Indexing Status
Subject indexing assigned by NLM
MeSH
Autoantibodies /immunology; Dermatomyositis /diagnosis /immunology; Humans; Predictive Value of Tests; Sensitivity and Specificity

AccessionNumber
12012007633

Date bibliographic record published
28/03/2012

Date abstract record published
18/10/2012

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.