The Diagnostic Test Accuracy of Serum Angiotensin Converting Enzyme for diagnosis of Sarcoidosis in patients with Uveitis: A Systematic Review and Meta-analysis

N Vyas[1], N Vyas[1], C O'Donovan[2], F Ghanchi[3]

1. Leeds School of Medicine, University of Leeds, Leeds, UK.
2. School of Immunology and Microbiology, King's College London, London, UK.
3. Department of Ophthalmology, Bradford Teaching Hospitals NHS Foundation Trust, Bradford, UK.

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INTRODUCTION

- Serum angiotensin converting enzyme (ACE) is conventionally used as a biomarker in the diagnosis of uveitis associated with sarcoidosis. The literature, however report a varying diagnostic accuracy of serum ACE within uveitis patients. This systematic review and meta analysis clarifies this clinical equipoise.

AIM

1. To evaluate the current evidence of the reported accuracy of serum ACE for diagnosing sarcoidosis in an adult uveitis population.
2. To determine the sensitivity, specificity, and positive and negative predicted values of ACE as a tool of diagnosing sarcoidosis in uveitis patients.

CONCLUSIONS

- We highlight the existing evidence for diagnostic accuracy of serum ACE for diagnosis of sarcoidosis in uveitis population of patients. This includes significant variation in reported accuracy of serum ACE.
- Additionally, increasing threshold for elevated ACE has minimal impact on sensitivity of the investigation while maintaining adequate specificity.
- Further studies evaluating the use of serum ACE in investigating sarcoidosis in uveitis populations are needed to improve the evidence base of the results.

METHOD

From inception till 3rd March 2023:

- Embase
- Medline
- CINAHL
- APA Psych INF

The inclusion criteria involves randomized controlled trials, cohort studies, cross-sectional diagnostic test accuracy studies, diagnostic case control studies. Prospective and retrospective studies will both be included in the review. The exclusion criteria include those which are in a non-English language, non-peer reviewed articles, conference abstracts, editorials, viewpoints and perspective literature.

- Systematic Review and Meta-analysis
- Biopsy-proven sarcoidosis and uveitis patients

Outcomes: Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of Serum ACE in biopsy-proven sarcoidosis and uveitis patients

Assessment of Bias:

Individual studies using Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2)

Individual prognostic factors using GRADE Approach

LIMITATIONS

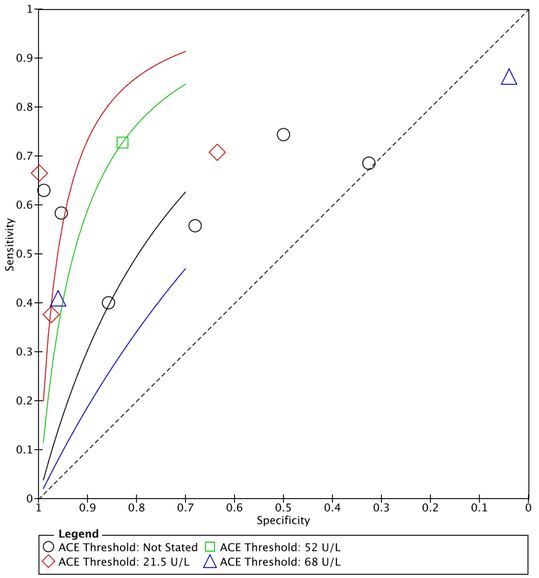
- Limited number of cross-sectional studies
- Limited number of studies with biopsy proven sarcoidosis

REFERENCES

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RESULTS

- Six hundred and five studies were screened, with seventeen studies meeting inclusion criteria.
- This consisted of a sample of 1,650 patients with a median age of 50.5 years old.
- Random effect meta-analysis revealed ranges of sensitivity (0.38-0.86), specificity (0.04-1.00), PPV (0.26-1.00) and NPV (0.44-0.86).
- Serum ACE threshold of 21.5 U/L and 52 U/L demonstrated similar sensitivity result across studies of 0.7.
- Case control studies (7 studies) all used control groups of granulomatous causes of uveitis.



Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)
Babu et al	34	39	27	83	0.56 [0.42, 0.68]	0.68 [0.59, 0.76]
Babu et al b	37	58	17	28	0.69 [0.54, 0.80]	0.33 [0.23, 0.44]
Birnbaum et al	12	0	19	0	0.39 [0.22, 0.58]	Not estimable
Bonsen et al	4	2	6	12	0.40 [0.12, 0.74]	0.86 [0.57, 0.98]
Choi et al	29	8	10	8	0.74 [0.58, 0.87]	0.50 [0.25, 0.75]
Dammacco et al	25	73	4	3	0.86 [0.68, 0.96]	0.04 [0.01, 0.11]
Febvay et al	50	0	31	0	0.62 [0.50, 0.72]	Not estimable
Groen et al	9	6	13	144	0.41 [0.21, 0.64]	0.96 [0.91, 0.99]
Kawaguchi et al	35	4	25	82	0.58 [0.45, 0.71]	0.95 [0.89, 0.99]
Kitaichi et al	51	1	30	90	0.63 [0.52, 0.73]	0.99 [0.94, 1.00]
Kitaichi et al b	16	0	8	37	0.67 [0.45, 0.84]	1.00 [0.91, 1.00]
Miserocchi et al	26	0	18	0	0.59 [0.43, 0.74]	Not estimable
Power et al	16	12	6	58	0.73 [0.50, 0.89]	0.83 [0.72, 0.91]
Suzuki et al	29	2	48	77	0.38 [0.27, 0.49]	0.97 [0.91, 1.00]
Takada et al	17	4	7	7	0.71 [0.49, 0.87]	0.64 [0.31, 0.89]

