

SYNOVIAL CALPROTECTIN IN SUSPECTED PERIPROSTHETIC JOINT INFECTION: THE ADDED VALUE WITHIN MSIS AND EBJIS CRITERIA

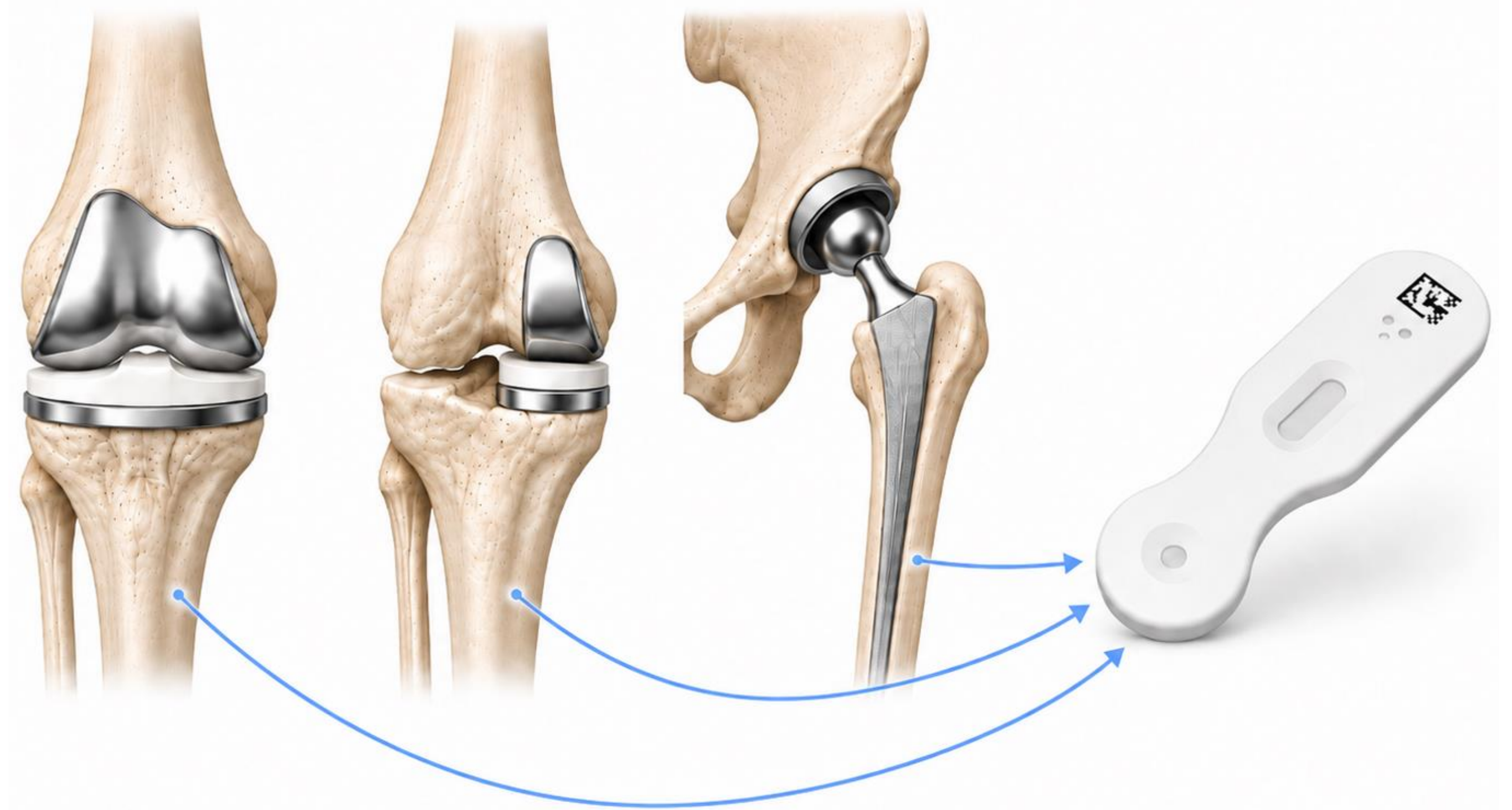
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BACKGROUND

Periprosthetic joint infection (PJI) remains diagnostically challenging. Synovial calprotectin is a rapid point-of-care biomarker with promising diagnostic accuracy, but its added diagnostic and clinical value remains unclear.

AIM

To evaluate the added diagnostic and clinical value of synovial calprotectin in patients with suspected PJI.



METHODS

Study design: Prospective two-center observational study of consecutive patients undergoing joint aspiration for suspected hip or knee PJI (January 2023–July 2024).

Calprotectin testing: Synovial calprotectin was measured using the Lyfstone point-of-care lateral flow test (positive ≥ 14 mg/L). The treating surgeon was blinded to the results.

Classification and evaluation: Patients were classified using the 2018 MSIS and 2021 EBJIS criteria at initial assessment (T0) and at last follow-up (T1, through August 2026).

Analysis: Diagnostic accuracy was assessed against definitive T1 classifications; diagnostically uncertain cases were analyzed separately. T0 uncertain cases were additionally evaluated in a hypothetical calprotectin-informed pathway to estimate potential changes in management.

RESULTS

Study population (n=75)

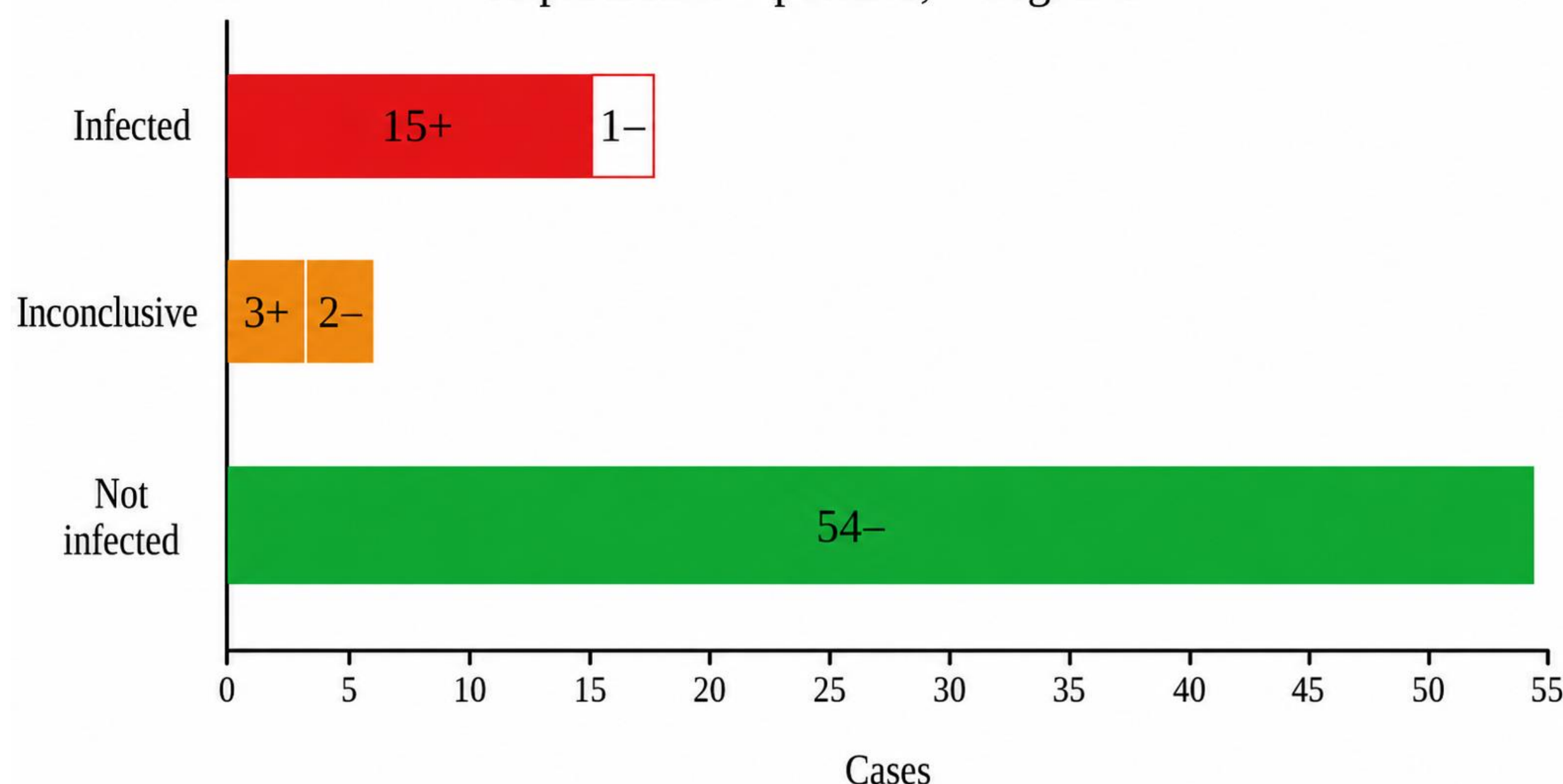
Calprotectin results

18 positive (24%)

57 negative (76%)

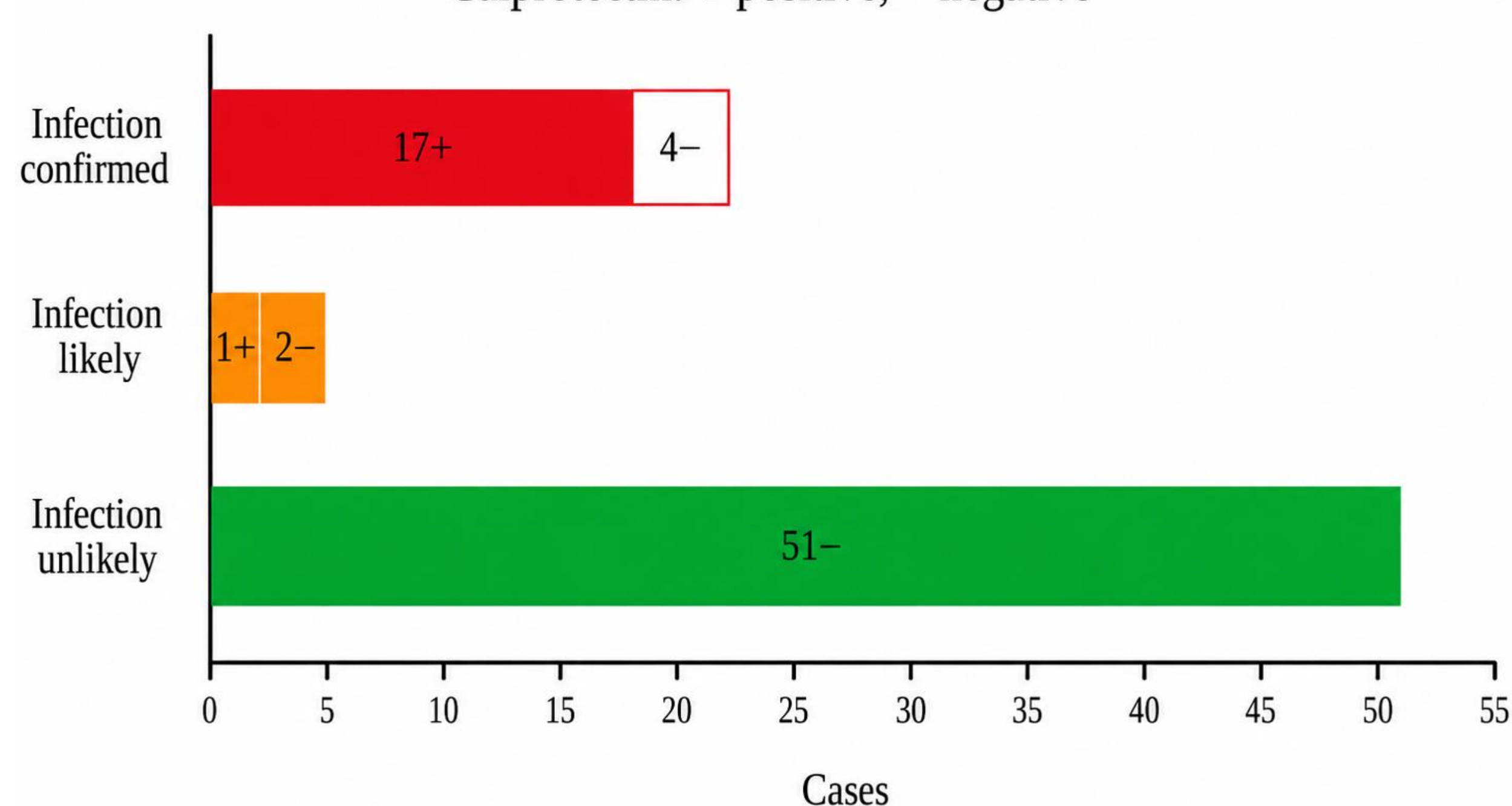
MSIS final classification (T1)

Calprotectin: + positive, – negative



EBJIS final classification (T1)

Calprotectin: + positive, – negative



CALPROTECTIN PERFORMANCE VS MSIS AT T1, % (95% CI)

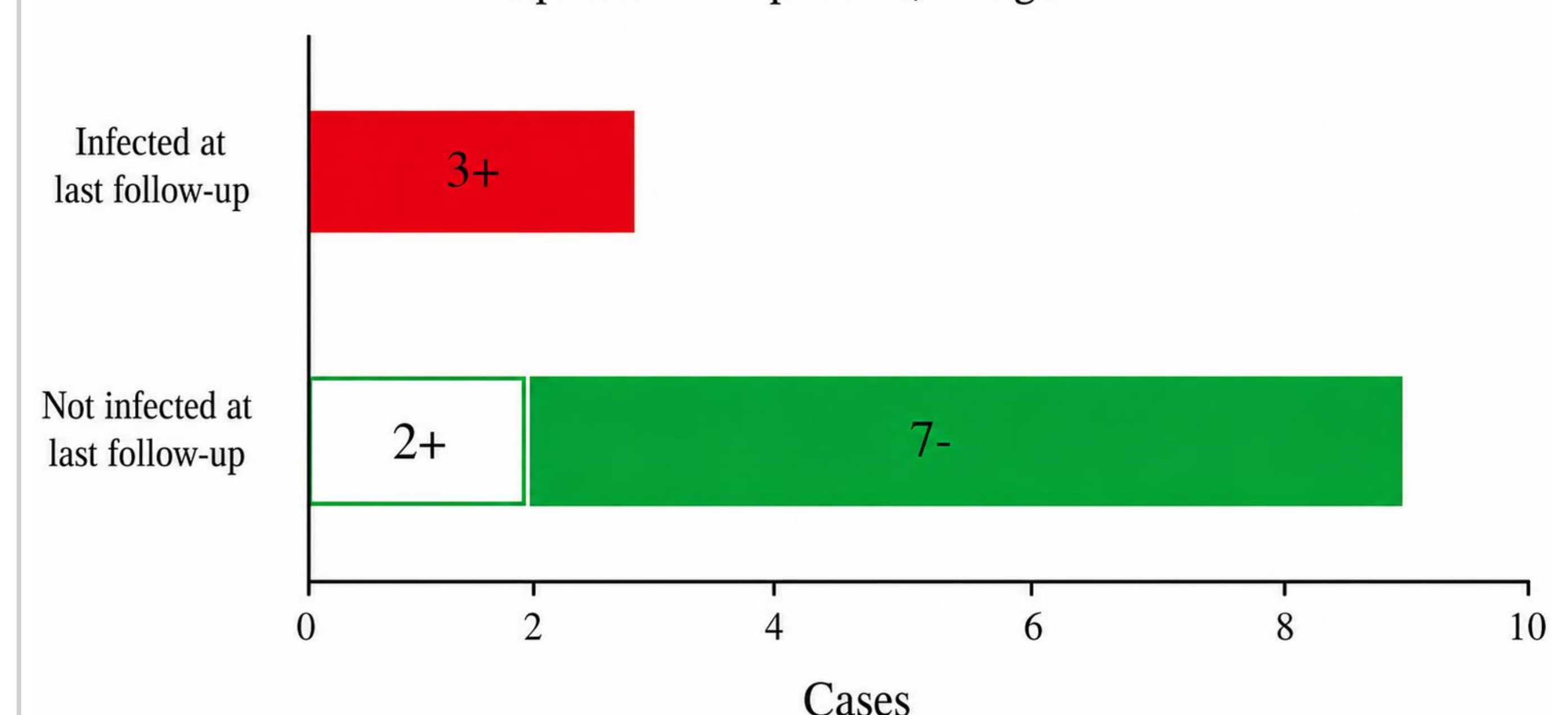
Sensitivity	Specificity	PPV	NPV
93.8 (69.8–99.8)	100 (93.4–100)	100 (78.2–100)	98.2 (90.3–100)

CALPROTECTIN PERFORMANCE VS EBJIS AT T1, % (95% CI)

Sensitivity	Specificity	PPV	NPV
81.0 (58.1–94.6)	100 (93.0–100)	100 (80.5–100)	92.7 (82.4–98.0)

Uncertain cases at T0 (n=12)

Calprotectin: + positive, – negative



CALPROTECTIN PERFORMANCE IN UNCERTAIN CASES AT T0, % (95% CI)

Sensitivity	Specificity	PPV	NPV
100 (29.2–100)	77.8 (40.0–97.2)	60.0 (14.7–94.7)	100 (59.0–100)

- Calprotectin-informed assessment could have changed management in 4 patients.

CONCLUSION

Synovial calprotectin showed high diagnostic accuracy, with excellent specificity under both MSIS and EBJIS criteria. Its added value may lie particularly in diagnostically uncertain cases, where it may support classification, inform clinical decision-making, and potentially reduce additional diagnostic testing.

REFERENCES

Parvizi J, Tan TL, Goswami K, Higuera C, Della Valle C, Chen AF, et al. The 2018 Definition of Periprosthetic Hip and Knee Infection: An Evidence-Based and Validated Criteria. *J Arthroplasty*. 2018;33(5):1309-14.e2.
McNally M, Sousa R, Wouthuyzen-Bakker M, Chen AF, Soriano A, Vogely HC, et al. The EBJIS definition of periprosthetic joint infection. *Bone Joint J*. 2021;103-B(1):18-25.

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