RESEARCH SUMMARY

Arginine or Hypertonic Saline–Stimulated Copeptin to Diagnose AVP Deficiency

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CLINICAL PROBLEM

Differentiation of arginine vasopressin (AVP) deficiency from primary polydipsia is critical because treatment differs and potential misdiagnosis carries the risk of severe complications. Hypertonic saline–stimulated copeptin measurement has shown a high diagnostic accuracy; however, it requires frequent sodium monitoring to avoid overstimulation and patient discomfort. Arginine-stimulated copeptin has shown similar accuracy with an acceptable side-effect profile. A head-to-head comparison of the two tests has been lacking.

CLINICAL TRIAL

Design: An international randomized trial evaluated whether the arginine-stimulated copeptin test would be noninferior to the hypertonic saline–stimulated copeptin test in differentiating between AVP deficiency and primary polydipsia in adults with polydipsia and hypotonic polyuria or a known diagnosis of AVP deficiency.

Intervention: 158 patients were assigned to undergo diagnostic evaluation with arginine or hypertonic-saline stimulation first, followed by the other test on a different day. Two endocrinologists independently made the final diagnosis, using clinical information, treatment response, and the hypertonic-saline test results. The primary outcome was the overall diagnostic accuracy according to prespecified copeptin cutoffs for each test — 3.8 pmol per liter after 60 minutes for arginine and 4.9 pmol per liter once the sodium level was >149 mmol per liter for hypertonic saline.

RESULTS

Efficacy: Arginine-stimulated copeptin was inferior to hypertonic saline–stimulated copeptin with respect to diagnostic accuracy in differentiating AVP deficiency from primary polydipsia.

Safety: Adverse events were mild for both tests; however, the majority of patients preferred the arginine-stimulation test.

LIMITATIONS AND REMAINING QUESTIONS

- There is no clear diagnostic standard for AVP deficiency, and final diagnoses include the outcome of the hypertonic-saline stimulation.

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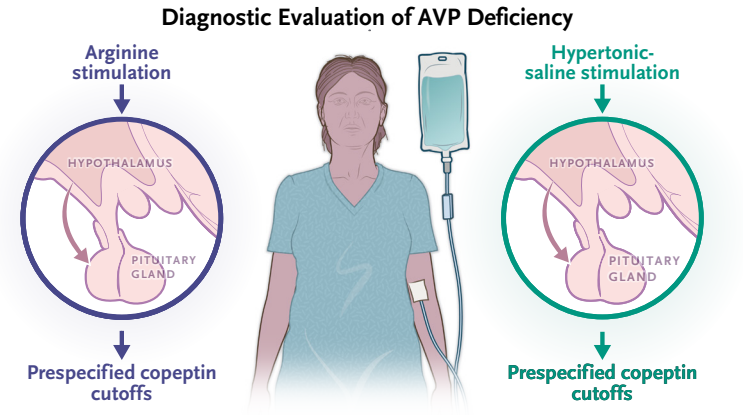

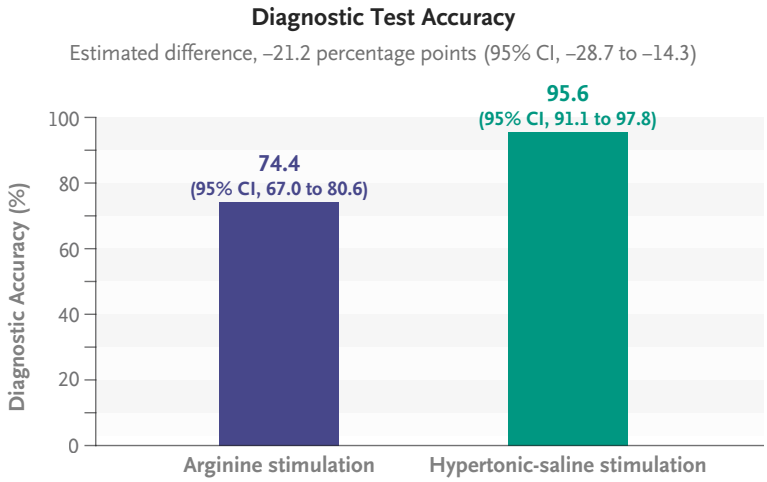

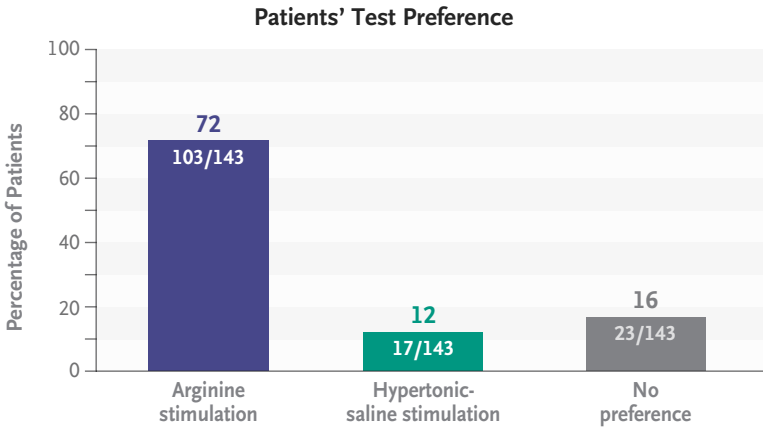

CONCLUSIONS

Arginine-stimulated copeptin was inferior to hypertonic saline–stimulated copeptin for the diagnostic evaluation of AVP deficiency.