Test Definition: RISAP

Risankizumab Quantitation with Antibodies, Serum

Overview

Useful For

Evaluation of patients with limited primary (initial) response to or secondary loss of response to risankizumab

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
RISA	Risankizumab, S	Yes	Yes
RISAB	Risankizumab Ab, S	No	Yes

Testing Algorithm

For more information see Ulcerative Colitis and Crohn Disease Therapeutic Drug Monitoring Algorithm.

Special Instructions

- Ulcerative Colitis and Crohn Disease Therapeutic Drug Monitoring Algorithm

Method Name

RISA: Liquid Chromatography Mass Spectrometry (LC-MS)
RISAB: Electrochemiluminescent-Bridging Immunoassay (ECLIA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Patient Preparation: For 12 hours before specimen collection, patient **should not** take multivitamins or dietary supplements (eg, hair, skin, and nail supplements) containing biotin (vitamin B7).
Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 1.5 mL
Collection Instructions:

1. Draw blood immediately before next scheduled dose (trough specimen).
2. Within 2 hours of collection, centrifuge, and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Gastroenterology and Hepatology Test Request (T728)
-Therapeutics Test Request (T831)

Specimen Minimum Volume

0.75 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK
Heat-treated specimens	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Risankizumab (Skyrizi, AbbVie) is a humanized IgG1 kappa therapeutic monoclonal antibody approved for the treatment of moderate to severe plaque psoriasis, psoriatic arthritis, ulcerative colitis, and Crohn disease.(1,2) Risankizumab targets interleukin 23A (IL-23p19), binding with high affinity to the p19 subunit and inhibiting further action.(3)

Therapeutic drug monitoring (TDM) has become standard-of-care for biologic therapies used in inflammatory bowel disease (IBD). In this context, TDM requires both quantitation of the therapeutic monoclonal antibody and assessment for the presence of anti-drug antibodies. Accurate interpretation of drug quantitation requires knowledge regarding patient diagnosis, drug dosage, and treatment schedule. Patients with plaque psoriasis or psoriatic arthritis are treated with 150 mg subcutaneously at weeks 0, 4, and every 12 weeks thereafter. The steady state maximum concentration (Cmax) and trough concentration (Ctrough) are estimated to be 12 mcg/mL and 2 mcg/mL, respectively. Patients with Crohn disease are treated with 600 mg intravenously at weeks 0, 4, and 8, followed by 180 mg or 360 mg subcutaneously at week 12 and every 8 weeks thereafter. During induction weeks 8 through 12, the median Cmax is estimated to be 156 mcg/mL, and the Ctrough is estimated to be 38.8 mcg/mL, according to the drug package insert. Steady state is achieved at 28 weeks after starting treatment in the dosing regimen for Crohn disease. Median Cmax and

Ctrough concentrations measured during weeks 40 through 48 of maintenance phase (or weeks 52-60 from start of treatment) are estimated to be 14.0 mcg/mL and 4.1 mcg/mL, respectively, for 180 mg dose or 28.0 mcg/mL and 8.1 mcg/mL, respectively, for 360 mg dose.(4)

The other important aspect of TDM for therapeutic monoclonal antibodies is detection of anti-drug antibodies. Similar to other therapeutic antibodies, risankizumab is immunogenic. Development of antibodies to risankizumab (ATRs) may increase drug clearance in treated patients and/or neutralize the drug effect, thereby potentially contributing to loss-of-response. Clinical trials have shown ATRs occur at rates of about 24% for plaque psoriasis, 12% for psoriatic arthritis, and 3.4% for Crohn disease.

In the context of limited initial response or loss-of-response over time to risankizumab, measurement of circulating drug concentrations and assessment for ATRs can help to guide patient management. For example, patients with low risankizumab trough concentrations in the absence of ATRs might benefit from dose escalation in an attempt to increase the circulating amount of the drug. In contrast, for patients with low drug concentrations and a detectable ATR, transition to a new drug therapy may be indicated.

Reference Values

RISANKIZUMAB QUANTITATION:
Risankizumab lower limit of quantitation =1.0 mcg/mL

RISANKIZUMAB ANTIBODIES:
Antibodies to risankizumab: <20.0 ng/mL

Interpretation

The optimal therapeutic serum concentration of risankizumab associated with favorable outcomes in Crohn disease is not known at this time. The current recommendation is to use the lowest dosing regimen that maintains response. According to the package insert, concentrations of risankizumab at steady state ranged from 4.1 mcg/mL (trough) to 14 mcg/mL (peak) at 180 mg dosing and 8.1 mcg/mL (trough) to 28 mcg/mL (peak) at 360 mg dosing. Steady state is achieved 28 weeks after initiation of therapy for the dosing regimen in Crohn disease.

The presence of detectable anti-risankizumab antibodies may be associated with increased risankizumab clearance and lower circulating concentrations of risankizumab in serum. Low trough concentrations of risankizumab may be correlated with loss of response to the drug.

Cautions

Clinical management decisions for patients receiving risankizumab treatment should not be based solely on quantitation of risankizumab or assessment of antibodies to risankizumab (ATRs). Test results must be interpreted within the clinical context of the patient.

Therapeutic ranges have not been established for risankizumab quantitation. Therapeutic concentrations of risankizumab may vary according to the disease (eg, Crohn disease vs psoriatic arthritis vs plaque psoriasis). The limit of quantitation of the liquid chromatography time-of-flight (TOF) mass spectrometry method is 1.0 mcg/mL and reported in place of a reference interval with every test report.

Interference with the ATR assay, in the form of depressed signal, was observed in samples containing more than 400

ng/mL biotin.

Clinical Reference

1. Feagan BG, Panes J, Ferrante M, et al. Risankizumab in patients with moderate to severe Crohn's disease: an open-label extension study. Lancet Gastroenterol Hepatol. 2018;3(10):671-680
2. Ferrante M, Panaccione R, Baert F, et al. Risankizumab as maintenance therapy for moderately to severely active Crohn's disease: results from the multicentre, randomised, double-blind, placebo-controlled, withdrawal phase 3 FORTIFY maintenance trial. Lancet. 2022;399(10340):2031-2046
3. Pang Y, D'Cunha R, Winzenborg I, Veldman G, Pivorunas V, Wallace K. Risankizumab: Mechanism of action, clinical and translational science. Clin Transl Sci. 2024;17(1):e13706
4. Skyrizi. Package insert. AbbVie, Inc.; Revised March 2024. Accessed June 3, 2024. Available at www.rxabbvie.com/pdf/skyrizi_pi.pdf

Performance

Method Description

Risankizumab Quantitation:
Risankizumab is extracted from serum and measured by liquid chromatography mass spectrometry.(Unpublished Mayo method)

Risankizumab Antibodies:
Testing for antibodies to risankizumab is accomplished using a laboratory-developed immunoassay.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Weekly

Report Available

2 to 9 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Test Definition: RISAP

Risankizumab Quantitation with Antibodies, Serum

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

80299
82397

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
RISAP	Risankizumab QN with Antibodies, S	105194-5

Result ID	Test Result Name	Result LOINC® Value
621304	Risankizumab, S	105041-8
621769	Risankizumab Ab, S	105195-2
621812	RISAB Interpretation	59462-2