Contemporary Recurrent Pericarditis Management – Real-world Evidence of Limited Cardiac Magnetic Resonance Imaging Prior to Initiating Rilonacept

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BACKGROUND

Recurrent Pericarditis (RP)

- Recurrent pericarditis (RP) is an IL-1-mediated chronic autoinflammatory disease[1,2]
- In patients with two or more recurrences, the median duration of disease is 3 years, with one-third of patients still suffering at 5 years and one-quarter still suffering at 8 years[2,3]
- Rilonacept, a once-weekly IL-1α and IL-1β cytokine trap, is the only FDA-approved treatment for RP[4]

Cardiac Magnetic Resonance (CMR)

- Pericardial inflammation and disease activity can be assessed with cardiac magnetic resonance (CMR); CMR imaging characterizes pericardial inflammation and may inform RP management[5]
  - T2-short tau inversion recovery (STIR) detects acute pericardial inflammation and edema
  - Late gadolinium enhancement (LGE) assesses pericardial vascularity with high sensitivity
- Recently, an international expert position statement on pericardial diseases highlighted the potential utility of CMR (and C-reactive protein [CRP]) for clarifying features of auto-inflammation[6]

We present data from RESONANCE and examine the role of CMR and/or clinical signs/symptoms in RP decision making prior to rilonacept initiation

METHODS

Data Collection

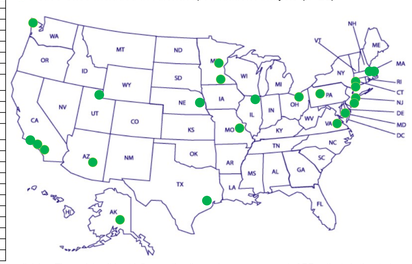
- The REgiStry Of the NAtural history of recurrent periCarditis in pEdiatric and adult patients (RESONANCE) (NCT04687358) has been collecting long-term combined retrospective and prospective data from US-based pericardial-disease-dedicated programs since 2020
- RESONANCE employs a hybrid data collection approach: up to 1-year retrospective data (the year prior to enrollment) are combined with prospective data into a single seamless observation period
  - This analysis includes data on rilonacept initiation only in the retrospective/prospective observation periods
  - Data pertaining to rilonacept initiation prior to the retrospective period were not captured
- Data were collected from March 2020 until the data cutoff date (DCO) (Feb 5, 2025)
- Data analyzed include general RP disease data (e.g., dates of incident pericarditis episode and RP diagnosis), medical history data (e.g., medications prescribed for first recurrence and reasons for rilonacept initiation, and all CMR data and RP clinical signs and symptoms at any time prior to rilonacept initiation collected during the retrospective/prospective observation periods

Data Analysis

- **Select Patient and Disease Characteristics (active RP disease cohort):** age, etiology, number of prior recurrences, corticosteroid use, RP disease duration
- **CMR Use:** CMR utilization prior to rilonacept initiation at any time during the retrospective/prospective observation periods was recorded
  - T2-STIR and LGE assessments were graded using standard criteria at the site level[7]
- **Clinical Characteristics:** Patient-reported and/or clinician-assessed chest pain and abnormal CRP (CRP ≥0.5 mg/dL) occurring in the period prior to rilonacept initiation were analyzed
- **Statistics:** Normally distributed data are presented as mean ± standard deviation (SD); all other data are presented as median [Q1, Q3] and n (%)

FIGURE 1. RESONANCE Sites Included in this Analysis

Principal Investigator	Site	State
Allan Klein	Cleveland Clinic Foundation	OH
S. Allen Luis	Mayo Clinic Rochester	MN
Moneal Shah	Allegheny Health Network	PA
Brittany Weber	Brigham & Women's Hospital	MA
Jonathan Salik	Massachusetts General Hospital	MA
Michael Garshick	NYU Langone health	NY
Georgia Thomas	Virginia Commonwealth University	VA
Dennis Finkelstein/ James Walter	Northwell Health/Lennox Hill Hospital	NY
Amanda Verma	Barnes Jewish/Washington University	MO
Dipan Shah	Houston Methodist	TX
Nicolas Phreaner	University of California, San Diego	CA
David Lin	Minneapolis Heart Institute Foundation	MN
Luigi Adamo	Johns Hopkins	MD
Michael Portman	Seattle Children's Hospital	WA
Austin Robinson	Scripps Health	CA
Robert Siegel	Cedars Sinai Medical Center	CA
Mohamed Al-Kazaz	Northwestern University	IL
John Ryan	University of Utah	UT
Tracey Hagerty	University of Vermont Medical Center	VT
Arif Albulushi	University of Nebraska Medical Center	NE
Suneet Purohit	Alaska Heart and Vascular Institute	AK
Thomas Waggoner	Pima Heart and Vascular	AZ
Jesson Yeh	TKL Research (decentralized site)	NJ



All aspects of patient care are at the discretion of the clinician. The registry did not influence the diagnosis or management of RP patients in the study.

RESULTS

PATIENT AND DISEASE CHARACTERISTICS

FIGURE 2. Patient Flow Chart

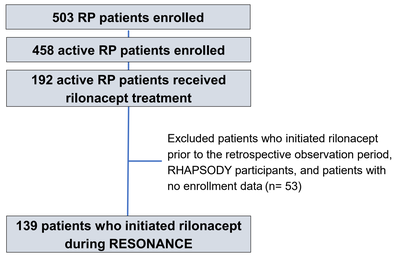


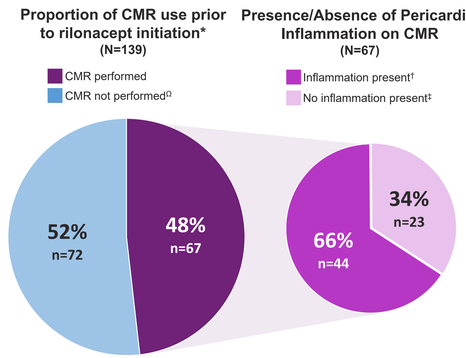
TABLE 1. Select Patient and Disease Characteristics of Patients Initiating Rilonacept

	(N=139)
Age at time of rilonacept initiation, years; median [Q1 ,Q3]	51 [37, 62] years
Idiopathic / viral pericarditis etiology*, %	91.4%
RP disease duration at rilonacept initiation†, years; median [Q1, Q3]	1.1 [0.4, 2.8] years
Number of prior recurrences at rilonacept initiation; median [Q1, Q3]	2 [1, 3]
Observation period, years, median [Q1,Q3]; sum (patient years)	2.0 [1.3, 3.0] years; 309.2 PY

*The remaining etiologies include: 5.8% post cardiac injury/post-pericardial injury syndrome and 2.9% other.
†30.9% and 46.0% of patients initiated rilonacept within 3 months and within 6 months, respectively, after their RP diagnosis.
PY, patient-years

RP DISEASE CHARACTERIZATION PRIOR TO RILONACEPT INITIATION DURING RESONANCE OBSERVATION PERIOD

FIGURE 3. Disease Characterization by Pericardial CMR and Non-CMR-Related Factors



* CMR performed at any time prior to rilonacept initiation (during retrospective/prospective observation periods).
Ω Includes patients from sites that did not (or could not) perform CMR, patients who chose not to have CMR despite clinician recommendation, and patients whose data from CMRs done outside of their treating facility were not sent to the treating site.
† Presence of LGE (mild, moderate, severe) or pericardial inflammation by T2-STIR.
‡ LGE not present OR no LGE grade reported OR no inflammation assessment given.
CMR, cardiac magnetic resonance; LGE, late gadolinium enhancement.

Non-CMR-Related RP Factors	Only Clinical Criteria Present			Imaging and/or Clinical Criteria Present
	CMR not performed* (N=72)	No inflammation present on CMR (N=23)	Total** (N=95)	Inflammation present on CMR (N=44)
Clinical Characteristics				
Abnormal CRP$^{\Delta}$ + chest pain, % (n/N)	38% (27/72)	22% (5/23)	34% (32/95)	43% (19/44)
Abnormal CRP$^{\Delta}$ only, % (n/N)	17% (12/72)	17% (4/23)	17% (16/95)	18% (8/44)
Chest pain only, % (n/N)	42% (30/72)	52% (12/23)	44% (42/95)	34% (15/44)
Inadequate response to prior therapy, % (n/N)	3% (2/72)[a]	4% (1/23)[b]	3% (3/95)	-
No abnormal CRP or chest pain, % (n/N)	-	-	-	5% (2/44)
Other Reasons for Rilonacept Initiation				
Loss of access to anakinra, % (n/N)	-	4% (1/23)	1% (1/95)	-
Intolerance to prior therapy (corticosteroid), % (n/N)	1% (1/72)	-	1% (1/95)	-

*Includes patients from sites that did not (or could not) perform CMR, patients who chose not to have CMR despite clinician recommendation, and patients whose data from CMRs done outside of their treating facility were not sent to the treating site.
**5 patients initiated rilonacept in the absence of signs/symptoms of RP and no inflammation present on CMR; 3 patients initiated rilonacept due to an inadequate response to prior therapy, and 2 patients initiated rilonacept for other reasons.
$^{\Delta}$Included abnormal CRP (CRP ≥0.5 mg/dL) during RESONANCE observation only.
[a]Prior therapy with colchicine (n=1) or colchicine + corticosteroid (n=1).
[b]Prior therapy with corticosteroid (n=1).
CMR, cardiac magnetic resonance; CRP, C-reactive protein; LGE, late gadolinium enhancement.

TABLE 2. Disease Characteristics Prior to Rilonacept Initiation

	Only clinical criteria present (N=95)[a]	Imaging and/or clinical criteria present (N=44)[a]
Number of recurrences prior to rilonacept initiation, median [Q1, Q3]	2 [1, 3]	2 [1, 2]
Corticosteroid use prior to rilonacept initiation, patients, % (n/N)	47% (45/95)	57% (25/44)
Disease duration at rilonacept initiation, years, median [Q1, Q3]	1.3 [0.6, 3.2] years	0.8 [0.3, 1.9] years

[a]See table in Figure 3.
CMR, cardiac magnetic resonance; CRP, C-reactive protein; LGE, late gadolinium enhancement; T2-STIR, T2- short-tau inversion recovery

DISCUSSION

- CMR was performed prior to rilonacept initiation in 48% (67/139) of patients
  - 66% (44/67) of these CMR studies demonstrated evidence of pericardial inflammation
  - Clinical pericarditis signs and/or symptoms on prior treatment were reported in 95% (42/44) of these patients with evidence of pericardial inflammation by CMR
- 68% (95/139) of patients initiated rilonacept with only clinical criteria (signs/symptoms of pericarditis) present
  - Chest pain and/or abnormal CRP (CRP ≥0.5 mg/dL or hsCRP ≥ 5 mg/L) were most frequently reported (95%; 90/95)
- Those who had initiated rilonacept with evidence of pericardial inflammation by CMR (with/without clinical signs/symptoms; 44/139) had a similar disease characteristics, prior to rilonacept initiation, versus those who had initiated rilonacept using clinical criteria alone (without evidence of inflammation by CMR; 95/139) (**Table 2**)
  - Median [Q1, Q3] disease duration: 0.8 [0.3, 1.9] years vs. 1.3 [0.6, 3.2] years
  - Median [Q1, Q3] number of prior recurrences: 2 [1, 2] vs. 2 [1, 3]
  - Prior corticosteroid use: 57% vs. 47%

LIMITATIONS

- All data were derived from an interval analysis of an unlocked database from an ongoing registry, and, as such, data may be missing, incomplete, and/or may change with future data cleaning
- CMR use, CRP measurements, and medication history which occurred prior to the retrospective observation period were not entered into the registry database and were not evaluated
- The study's inclusion of established pericardial-disease-dedicated programs, with principal investigators experienced in the management of recurrent pericarditis, may limit generalizability

CONCLUSIONS

- **Approximately one-third of patients who initiated rilonacept had evidence of inflammation by CMR, of whom 95% also had clinical signs/symptoms of pericarditis**
- **The remaining two-thirds of patients who initiated rilonacept did so with only clinical signs/symptoms of pericarditis being present**
- **While a recent expert position statement highlighted the utility of CMR to guide clinical decision making, real-world data demonstrate that typical clinical signs and symptoms of pericarditis continue to provide critical information for selection of patients for IL-1 pathway inhibition**

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DISCLOSURES

B. Weber: consultant fees from Kiniksa Pharmaceuticals, Novo Nordisk, Horizon Therapeutics, and BMS; **P.C. Cremer:** grants and consultant fees from Kiniksa Pharmaceuticals, grants and personal fees from Sobi; **M. S. Garshick:** consultant fees from BMS, Agepha, Kiniksa Pharmaceuticals; **S.A. Luis:** consultant fees from Kiniksa Pharmaceuticals, Cardiol Therapeutics, and Medtronic; **A. Raisinghani:** consultant fees from Kiniksa Pharmaceuticals; **V. Parameswaran, A. Curtis, and J. F. Paolini:** shareholders and employees of Kiniksa Pharmaceuticals; **A.L. Klein:** grants and consultant fees from Kiniksa Pharmaceuticals, Cardiol Therapeutics, and Pfizer.

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