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SPECIAL REPORT

International consensus recommendations for the diagnosis and treatment of Rasmussen syndrome: A modified Delphi procedure

Coral M. Stredny[1] | **Claude Steriade**[2,3] | **Maria T. Papadopoulou**[4] | **Suresh Pujar**[5] | **Marios Kaliakatsos**[5] | **Stuart Tomko**[6] | **Tilman Polster**[7] | **Christopher Cortina**[8] | **Bo Zhang**[9] | **Ronny Wickström**[10] | **International Rasmussen Syndrome Consensus Group**

[1]Division of Epilepsy and Clinical Neurophysiology, Department of Neurology, Center in Neuroimmunology, Harvard Medical School, Boston Children's Hospital, Boston, Massachusetts, USA

[2]Department of Neurology, New York University Langone Health, New York, New York, USA

[3]Neuroscience Institute, New York University, New York, New York, USA

[4]Department of Pediatric Epileptology, Functional Neurology and Sleep Disorders, University Hospitals of Lyon (HCL), Member of ERN EpiCARE, Lyon, France

[5]Neurology/Epilepsy Department, Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK

[6]Department of Neurology, St. Louis Children's Hospital, St. Louis, Missouri, USA

[7]Department of Epileptology, Krankenhaus Mara, Bethel Epilepsy Center, Medical School OWL, Bielefeld University, Bielefeld, Germany

[8]Biostatistics and Research Design Center, Boston Children's Hospital, Boston, Massachusetts, USA

[9]Biostatistics and Research Design Center, Department of Neurology, Boston Children's Hospital, Boston, Massachusetts, USA

[10]Department of Women's and Children's Health, Astrid Lindgren's Children's Hospital, Karolinska Institute, Stockholm, Sweden

Correspondence
Coral M. Stredny, Division of Epilepsy and Clinical Neurophysiology, Department of Neurology, Center in Neuroimmunology, Harvard Medical School, Boston Children's Hospital, 300 Longwood Avenue, Boston, MA 02115, USA.
Email: coral.stredny@childrens.harvard.edu

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Abstract

Rasmussen syndrome (RS) includes a well-described constellation of refractory focal seizures, often including epilepsia partialis continua, hemiplegia with progressive unilateral cortical atrophy, and cognitive/language decline. However, the precise early pathogenesis and reliable biomarkers remain elusive. In addition, we lack operational management guidelines, including diagnostic evaluation, disease-monitoring assessments, and medical and surgical treatment approaches. We aimed to create an expert consensus statement to guide and standardize the treatment of RS, with the goal of providing recommendations applicable to a global population. An expert panel was convened to complete three rounds of a modified Delphi procedure given the lack of high-level evidence, with a focus on workup to exclude mimicking diagnoses, disease-activity metrics, and treatment. Consensus was defined as ≥75% of responses being agree/strongly agree in either two subsequent rounds or in the third and final round. A total of 122 of

International Rasmussen Syndrome Consensus Group: See Table S1.

143 statements met consensus. Proposed diagnostic evaluation in patients with possible RS is outlined, including physical examination, blood/cerebrospinal fluid analyses, neuroimaging, electroencephalography (EEG), and biopsy. Suggested disease-monitoring assessments include neuropsychological testing and serial magnetic resonance imaging (MRI). Intravenous corticosteroids are recommended as first-line, acute immunotherapy for seizure exacerbations and status epilepticus, with or without the addition of intravenous immunoglobulin. Options for maintenance immunotherapy are outlined, with lack of evidence noted for comparing efficacy of these treatments. Hemispheric disconnection remains the most effective seizure treatment, with parameters including age, function, seizure burden, and patient values influencing candidacy for surgery. This consensus statement offers a guideline to standardize management, as well as suggests future directions to further elucidate underlying pathophysiology and target more-effective, better-tolerated treatments.

KEYWORDS

hemispherotomy, immunotherapy, Rasmussen syndrome

1 | INTRODUCTION

The clinical presentation of Rasmussen syndrome (RS) as a spectrum of drug-resistant focal epilepsy, hemiplegia, progressive unihemispheric atrophy, and, often, cognitive and/or language decline is well-defined.[1] A treatment algorithm regarding the general approach to surgery vs immunotherapy has been proposed,[1] and an initial consensus statement, including clinical diagnostic criteria, was published in 2005[2] and revised in 2013 (Table 1).[3] However, we lack an up-to-date diagnostic evaluation, as well as an operational immunotherapy and surgical treatment paradigm.

Given the paucity of existing randomized-controlled trials and the difficulty of conducting them in this rare disease, a modified Delphi procedure to establish an updated expert consensus statement on the diagnosis and treatment of RS was proposed. We aim to provide this as a guide for international physicians managing RS, especially in areas where subspecialty expertise may be inaccessible. However, these are meant to serve as guides, and not absolute rules, that still require individualization to patient-specific circumstances and may evolve as new evidence becomes available.

Key points

- A diagnostic approach is outlined, including physical examination, cerebrospinal fluid (CSF)/blood analyses, neuroimaging, electroencephalography (EEG), and biopsy in differentiating Rasmussen syndrome (RS) from mimicking diagnoses.
- Neuropsychological testing and serial magnetic resonance imaging (MRI) studies, as well as additional ancillary testing in some patients, are suggested to monitor disease activity.
- Intravenous (IV) corticosteroids are recommended as first-line, acute immunotherapy for seizure exacerbations and status epilepticus, with or without the addition of IV immunoglobulin (Ig).
- Maintenance immunotherapy options include IVIg, azathioprine, mycophenolate, rituximab, and adalimumab, among others, with no evidence to compare efficacy.
- Hemispheric disconnection remains the most effective seizure treatment; age, function, seizure burden, and patient values influence candidacy.

2 | MATERIALS AND METHODS

Data are reported as suggested by the ACcurate COnsensus Reporting Document (ACCORD) guidelines (Appendix S1).[4] Methods of the panel selection and modified Delphi procedure are detailed in the supplementary material (Appendices S2–S4, Tables S1 and S2). Descriptive statistics are used to summarize participant

TABLE 1 Rasmussen syndrome clinical diagnostic criteria used in consensus recommendations.

Part A	
A1 Clinical	Focal seizures (± EPC) and unilateral cortical symptoms
A2 EEG	Unilateral seizure onset, slowing ± interictal epileptiform discharges
A3 MRI	Unilateral focal cortical atrophy and one or both of the below: 1. T2/FLAIR hyperintensity AND/OR 2. Hyperintensity/atrophy of ipsilateral head of caudate
Part B	
B1 Clinical	EPC or progressive unilateral cortical symptoms
B2 MRI	Progressive unilateral focal cortical atrophy
B3 Histopathology	T cell–predominant encephalitis

Note: RS Diagnostic Criteria: Patient must fulfill 3/3 Part A, 2/3 Part B,[2] OR 2/3 Part A AND B3.[3] Adapted from Bien et al. Pathogenesis, diagnosis and treatment of Rasmussen encephalitis: a European consensus statement, *Brain* 2005; and Olson et al. Clinical application and evaluation of the Bien diagnostic criteria for Rasmussen encephalitis, *Epilepsia* 2013.

Abbreviations: EEG, electroencephalography; EPC, epilepsia partialis continua; FLAIR, fluid-attenuated inversion recovery; MRI, magnetic resonance imaging.

TABLE 2 General diagnostic and treatment principles.

Statement	% Agree (number voting)
There is a spectrum of severity in RS with two predominant phenotypes: Type 1: early onset, rapidly progressive vs Type 2: later onset, slowly progressive	97.0 (33)
Bilateral disease is extremely rare and should prompt extensive evaluation and consideration of alternate diagnoses	100 (35)
Despite varying phenotypes, diagnostic approach remains similar for Type 1 and Type 2 patients	97.1 (34)
Treatment recommendations may differ for Type 1 and Type 2 patients based predominantly on age, rate of progression, and severity of symptoms	93.9 (33)
Some parts of the diagnostic testing to rule out alternative diagnoses may be dependent on regional availability	94.1 (34)
All treatment recommendations may be dependent on regional availability and medical provider expertise	91.2 (34)
Management of RS should preferentially occur in or be guided by a center with multidisciplinary expertise in diagnosing and treating RS, including neurology/epilepsy, neuroimmunology/rheumatology, epilepsy neurosurgery, neuroradiology, neuropathology, and neuropsychology	100 (36)
If a center specializing in RS management is not available within a region, physician-to-physician collaboration and/or remote second opinions should be considered	100 (34)
The treatment of RS requires an individualized approach for each patient and shared decision-making with the family given limited existing evidence and treatment efficacy for many patients	97.0 (33)

Abbreviation: RS, Rasmussen syndrome.

TABLE 3 Assessment of mimics.

Statement: These statements refer to a patient with an acute presentation (<6 months) and/or who does not fulfill diagnostic criteria for RS and/or there is suspicion for an alternative diagnosis	% Agree (number voting)
All patients should have assessment for any clinical signs of Parry Romberg syndrome (rash, hemiatrophy, and/or linear scleroderma)	90.0 (30)
Biopsy may be pursued in patients fulfilling only 2/3 Part A or 1/3 Part B criteria if other diagnoses are already reasonably excluded in order to facilitate earlier diagnosis	81.3 (32)
If biopsy is pursued, open biopsy in a non-eloquent region targeting a T2/FLAIR hyperintensity when accessible, or FDG-PET hypometabolic region if T2/FLAIR hyperintensity is absent, is preferred to increase yield	100 (31)
Biopsy may be unnecessary in patients otherwise fulfilling diagnostic criteria (i.e., 1. 3/3 Part A, or 2. B1 and B2 criteria) and in whom other diagnoses have been reasonably excluded	100 (34)
Histopathology can show findings suggestive of RS, but there are no completely specific features that are not seen in other disease states	93.9 (33)
A negative biopsy may not exclude the diagnosis of RS, as normal tissue may be adjacent to abnormal tissue in RS	90.9 (33)
Lumbar puncture should be considered in all patients	90.6 (32)
CSF cytokines have the potential to offer diagnostic value, but interpretation of results and clinical relevance is currently not established	93.1 (29)
These CSF studies should be considered in ALL patients	
CSF cell count (white blood cell, red blood cell)	96.9 (32)
CSF glucose (paired with serum glucose)	90.6 (32)
CSF protein	96.9 (32)
CSF oligoclonal bands	93.8 (32)
CSF IgG index	90.3 (31)
CSF lactate (paired with serum lactate)	87.5 (32)
CSF autoimmune encephalopathy antibody panel	93.8 (32)
CSF bacterial/viral PCR panel	81.3 (32)
These serum studies should be considered in ALL patients	
Serum autoimmune encephalopathy antibody panel	96.9 (32)
Serum myelin oligodendrocyte glycoprotein (MOG) antibody testing	87.5 (32)
Infectious testing based on region, presentation, and other systemic symptoms	93.8 (32)
According to clinical symptoms and suspicion for an alternative diagnosis, the following tests can be considered in SOME patients	
Serum lactate	93.3 (30)
Serum pyruvate	83.3 (30)
Comprehensive rheumatologic evaluation	86.7 (30)
Whole exome sequencing or whole genome sequencing	83.3 (30)
Mitochondrial genome	90.0 (30)
Particularly in patients who may receive immunotherapy, the below serum studies may be obtained	
Hepatitis B surface antigen	75.9 (29)
Hepatitis B core antibody	75.9 (29)
T and B cell subsets	79.3 (29)
IgG, IgA, IgM	76.7 (30)
Neuroimaging and EEG	
Brain MRI should be performed in all patients	100 (36)
If initial MRI is not clearly consistent with RS, repeat MRI should be considered within 3 months	100 (36)
Brain FDG-PET may be pursued to assess for hemispheric hypometabolism to support a diagnosis of RS, particularly early in the disease course when MRI findings may not be as extensive	88.2 (34)
Brain FDG-PET may be pursued in new onset EPC when a differential diagnosis of focal cortical dysplasia is considered in MRI lesion-negative patients	88.2 (34)
In cases where autoimmune encephalitis/paraneoplastic disease is suspected, malignancy screening with ultrasound or cross-sectional body imaging should be considered	91.2 (34)

TABLE 3 (Continued)

Statement: These statements refer to a patient with an acute presentation (<6 months) and/or who does not fulfill diagnostic criteria for RS and/or there is suspicion for an alternative diagnosis	% Agree (number voting)
Long-term EEG monitoring should be considered in all patients	94.3 (35)

Abbreviations: CSF, cerebrospinal fluid; EEG, electroencephalography; FDG-PET, fluorodeoxyglucose–positron emission tomography; FLAIR, fluid-attenuated inversion recovery; MRI, magnetic resonance imaging; PCR, polymerase chain reaction; RS, Rasmussen syndrome.

TABLE 4 Disease monitoring in established RS.

Statement: These statements refer to a patient in whom the diagnosis of RS has been established	% Agree (number voting)
Neuropsychological testing	
Neuropsychological testing should be acquired in all patients if available	100 (35)
Neuropsychological testing should be performed every 6 months-2 years in all patients if available, based on rate of progression of disease	94.3 (35)
EEG monitoring	
While there is not a single pathognomonic EEG feature specific to RS, unihemispheric slowing ± admixed unihemispheric epileptiform discharges is expected	96.9 (32)
Contralateral, independent interictal epileptiform discharges and slowing may be seen in RS over the unaffected/healthy hemisphere	96.6 (29)
Contralateral epileptiform discharges may be projected over the unaffected/healthy hemisphere in RS despite the generator being in the affected/disease hemisphere	100 (29)
Contralateral, independent interictal discharges may not prevent decision to proceed to functional hemispherectomy/hemispherotomy	96.4 (28)
Generalized interictal discharges may not prevent decision to proceed to functional hemispherectomy/hemispherotomy	92.9 (28)
Contralateral, independent ictal onset may not prevent decision to proceed to functional hemispherectomy/hemispherotomy but should prompt consideration of any alternate diagnoses	86.2 (29)
Generalized ictal onset may not prevent decision to proceed to functional hemispherectomy/hemispherotomy but should prompt consideration of any alternate diagnoses	79.3 (29)
Contralateral independent interictal slowing should not prevent decision to proceed with functional hemispherectomy/hemispherotomy	89.7 (29)
Brain MRI	
Serial MRIs should be considered in all patients before functional hemispherectomy/hemispherotomy and in patients who are not candidates for hemispheric disconnection	91.7 (36)
Serial MRIs should be considered every 3–6 months when the patient is experiencing clinical progression	100 (36)
The frequency of serial MRIs may decrease after 1–2 years of clinical and MRI stability	97.1 (35)
Serial MRI frequency may be decreased to every 12–24 months after the patient experiences clinical and MRI stability	94.3 (35)
If a patient displays clinical and MRI stability in the chronic phase, serial MRIs may be considered on an as needed basis dependent on symptoms	90.9 (33)
Volumetric analysis of atrophy on MRI may complement visual analysis to detect hemispheric differences and trend the rate of disease progression	87.9 (33)
Language dominance ancillary testing (such as fMRI or Wada) should be considered when available and in a patient able to participate based on age/developmental status in	
Patients with RS being considered for epilepsy surgery with language decline regardless of hemisphere involved	85.3 (34)
Patients with RS being considered for epilepsy surgery with predicted dominant hemisphere involvement based on handedness	88.2 (34)
Patients with RS being considered for epilepsy surgery with ictal aphasia/speech arrest	88.2 (34)

Abbreviations: EEG, electroencephalography; fMRI, functional magnetic resonance imaging; MRI, magnetic resonance imaging; RS, Rasmussen syndrome.

Statement: These statements refer to a patient in whom the diagnosis of RS has been established	% Agree (number voting)
Anti-seizure medication choice should be tailored to the electroclinical seizure type(s) as there is no evidence to suggest any anti-seizure medication is superior to another for treatment of RS	100 (33)
A reasonable approach to seizure treatment with anti-seizure medications includes targeting control of focal to bilateral tonic clonic or debilitating seizures, avoiding polypharmacy, and avoiding oversedation or less tolerable side effects	93.8 (32)
Epilepsia partialis continua tends to be refractory to both anti-seizure medications and immunotherapy	93.8 (32)

Abbreviation: RS, Rasmussen syndrome.

TABLE 5 Treatment: non-surgical/non-immunomodulatory treatment.

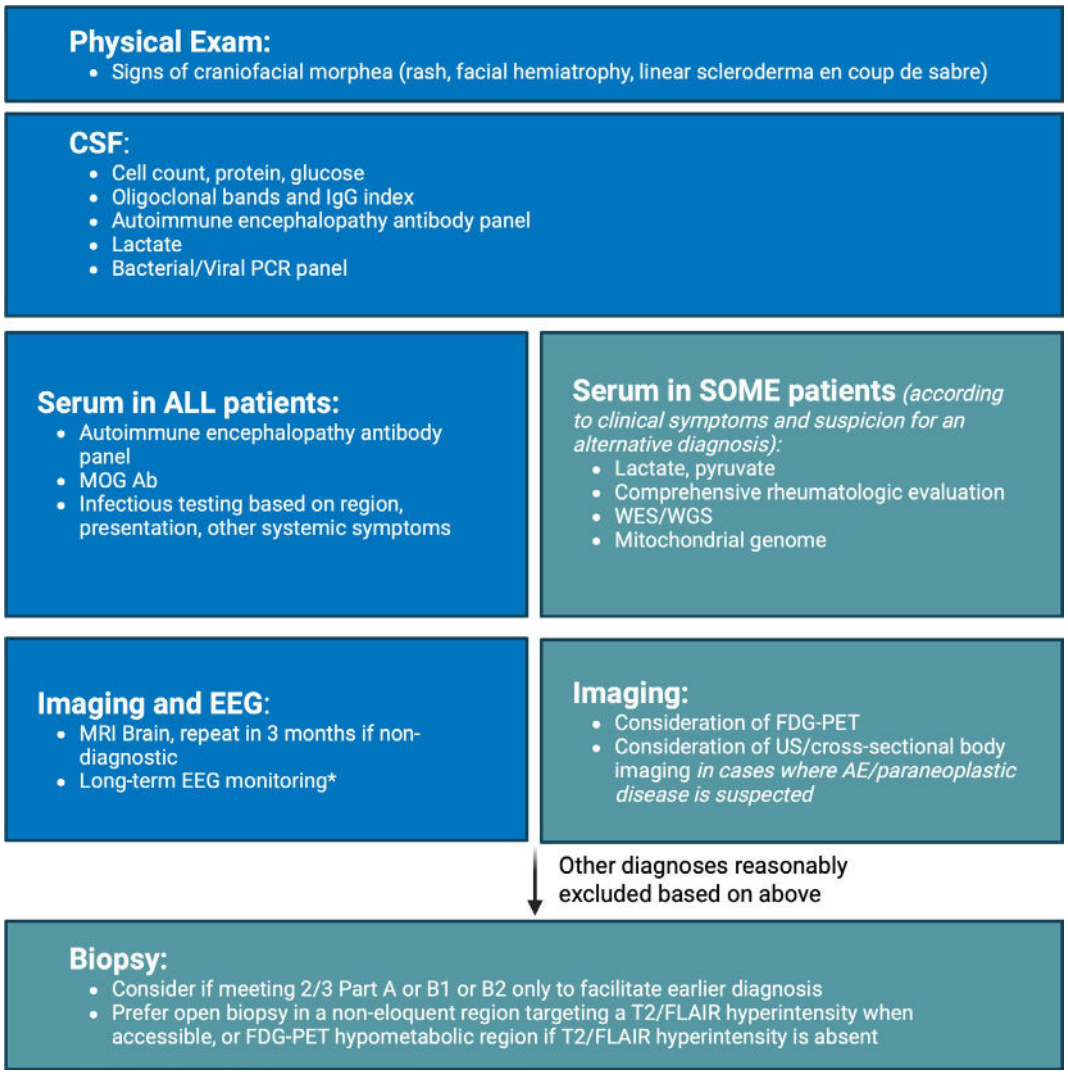


FIGURE 1 Diagnostic algorithm. An algorithm to differentiate RS from mimicking diagnoses is included. *If an initial EEG recording early in the disease is not revealing, repeat EEG may be considered, as some attributes may develop as the disease progresses.[18] AE, autoimmune encephalitis; CSF, cerebrospinal fluid; EEG, electroencephalography; FDG-PET, fluorodeoxyglucose–positron emission tomography; FLAIR, fluid-attenuated inversion recovery; IgG, immunoglobulin G; MOG Ab, anti-myelin oligodendrocyte glycoprotein antibody; MRI, magnetic resonance imaging; PCR, polymerase chain reaction; RS, Rasmussen syndrome; US, ultrasound; WES, whole exome sequencing; WGS, whole genome sequencing. Created in BioRender. Stredny, C. (2026). https://BioRender.com/jtpg9cn.

TABLE 6 Treatment: immunomodulatory treatment.

Statement: *First-line immunotherapy* refers to the acute use of steroids or IVIg over 2–5 days in a patient undergoing evaluation for RS or with established RS. *Prolonged first-line/maintenance immunotherapy* refers to the continued use of steroids or IVIg beyond the initial few days of acute treatment (e.g., weekly, monthly, or tapers over several weeks) in a patient undergoing evaluation for RS or with established RS. *Maintenance immunotherapy* refers to the use of other second-line agents (rituximab, adalimumab, azathioprine, mycophenolate, tacrolimus, cyclophosphamide, anakinra) in a chronic fashion, typically in a patient with established RS	**% Agree (number voting)**
Evidence is currently limited to compare effectiveness of first-line, prolonged first-line/maintenance, and maintenance immunotherapy regimens	96.6 (29)
First-line, prolonged first-line/maintenance, and maintenance immunotherapy regimens should be considered based on co-morbid autoimmune conditions, preferred route, and patient/family tolerance and preference	96.9 (32)
As diagnostic criteria may be met relatively late in the disease's evolution, empiric first-line immunotherapy (IV corticosteroids or IVIg) in patients with suspected RS should be considered, even if all diagnostic criteria are not met	96.7 (30)
Steroids	
Steroids may be considered as first-line and/or prolonged first-line/maintenance immunotherapy for significant seizure exacerbations or convulsive status epilepticus	96.7 (30)
IV methylprednisolone 20-30 mg/kg/dose (max 1000 mg) × 3–5 days is the preferred regimen for acute, first-line steroid treatment	93.3 (30)
An oral corticosteroid taper or monthly IV methylprednisolone pulses may be considered if an initial course of IV methylprednisolone is effective until another maintenance immunotherapy option becomes therapeutic	96.7 (30)
If there is response to initial IV methylprednisolone pulse, an oral prednisone/prednisolone taper starting at 1–2 mg/kg/day (max 60 mg daily) may be considered as prolonged first-line/maintenance therapy until another maintenance immunotherapy option becomes therapeutic	82.8 (29)
IVIg	
IVIg may be considered in addition to corticosteroids as first-line and/or prolonged first-line/maintenance treatment	86.2 (29)
If IVIg is used as a first-line treatment, a dose of 2 g/kg divided over 2–5 days is the preferred regimen	86.2 (29)
If prolonged first-line/maintenance treatment with IVIg is used, a dose of 1 g/kg every 4 weeks is the preferred regimen	75.0 (28)
Other medications	
Plasma exchange has a limited role in the treatment of RS	79.3 (29)
IVIg, rituximab, adalimumab or azathioprine/mycophenolate may be reasonable maintenance therapy options but there are no studies to suggest superiority of any agent	93.3 (30)
If IVIg, rituximab, adalimumab or azathioprine/mycophenolate is ineffective, replacement with another may be a reasonable next option	80.0 (30)
If azathioprine is used as maintenance therapy, a goal dose of 1–2.5 mg/kg daily is the preferred regimen	87.0 (23)
Mycophenolate may be considered as an alternative to azathioprine as maintenance therapy based on prescriber comfort and regional availability given similar mechanism of action	90.9 (22)
If mycophenolate mofetil is used, a goal dose of 400–600 mg/m^2/dose (max 1000 mg) twice daily is a commonly used regimen	90.9 (22)
If rituximab is used, dosing regimen should be customized based on institutional protocols	96.2 (26)
If rituximab is used, 375–750 mg/m^2 (max 1000 mg) on Day 0 and Day 14 or 375 mg/m^2 (max 1000 mg) weekly for 4 weeks are commonly used regimens	95.7 (23)
If adalimumab is used, 24 mg/m^2/dose (max 40 mg/dose, rounded to the nearest auto-injector/prefilled syringe dose) given once every 2 weeks is a preferred regimen	77.8 (18)
Given cumulative toxicity, use of cyclophosphamide tends to be reserved for ineffectiveness or intolerance of at least one other maintenance immunotherapy option	87.5 (24)
Although pathophysiologically promising, there is currently limited efficacy and safety data to support the use of natalizumab	88.0 (25)

(Continues)

TABLE 6 (Continued)

Statement: *First-line immunotherapy* refers to the acute use of steroids or IVIg over 2–5 days in a patient undergoing evaluation for RS or with established RS. *Prolonged first-line/maintenance immunotherapy* refers to the continued use of steroids or IVIg beyond the initial few days of acute treatment (e.g., weekly, monthly, or tapers over several weeks) in a patient undergoing evaluation for RS or with established RS. *Maintenance immunotherapy* refers to the use of other second-line agents (rituximab, adalimumab, azathioprine, mycophenolate, tacrolimus, cyclophosphamide, anakinra) in a chronic fashion, typically in a patient with established RS	**% Agree (number voting)**
Although pathophysiologically promising, there is currently limited efficacy and safety data to support the use of anakinra (IL-1 receptor antagonist)	88.0 (25)
Assessment of efficacy and duration of treatment	
When considering immunotherapy efficacy, a composite assessment of seizure frequency and severity, functional decline, and quality of life are important outcome metrics	96.8 (31)
Seizure frequency or intensity decreased by at least 50% and deemed to substantially improve patient quality of life and/or decreased progression to bilateral tonic–clonic seizures is indicative of effective immunotherapy	93.5 (31)
Stability of functional status as demonstrated by stable neurological exam, stable brain MRI, and/or stable or improved cognitive/language skills on neuropsychologic testing is indicative of effective immunotherapy.	81.8 (33)
If immunotherapy is deemed effective, treatment may be continued for at least 1–2 years	92.9 (28)
After 1–2 years of stability, ongoing immunotherapy and the specific regimen should be reevaluated	100 (29)
Gradual de-escalation of IVIg by weaning the frequency may be considered when stopping	84.6 (26)
Failure to improve seizures by at least 50% and/or to improve patient quality of life, worsening weakness on two serial exams, worsening hemiatrophy on two serial MRI studies, and/or worsening neuropsychologic testing may be indicative of treatment failure and consideration to add to or change regimen	97.0 (33)
If functional status improves but seizures do not (or vice versa), addition or change to the immunotherapy regimen or proceeding to functional hemispherectomy/hemispherotomy may be considered	100 (32)

Abbreviations: IL-1, intraleukin-1; IV, intravenous; IVIg, intravenous immunoglobulin; MRI, magnetic resonance imaging; RS, Rasmussen syndrome.

demographics. The percentages of participants scoring each statement as agree/strongly agree are tabulated to determine consensus.

3 | RESULTS

One hundred twenty-two statements reached consensus (Tables 2–8). A summary of proposed statements and iterative revisions, as well as supporting evidence, is detailed in Appendices S4 and S5.

4 | DISCUSSION

4.1 | General diagnostic and treatment principles

Although RS consists of a well-described constellation of symptoms, these exist on a spectrum of severity. This spectrum is highlighted by the historically coined phenotypes, "Type 1" and "Type 2." The more common "Type 1" phenotype occurs in younger children (mean age of 4–7 years in historical and recent cohorts[5–7]) and is more rapidly progressive, with most injury occurring within the first year of illness.[6,7] The "Type 2" phenotype includes adolescent or adult onset (mean age of 16–19 years in historical cohorts[7,8]) and typically a more prolonged, milder course with fewer seizures and less weakness/cognitive decline. The statements begin by defining the spectrum of Type 1 (early onset, rapidly progressive) and Type 2 (later onset, slowly progressive) phenotypes and stress the rarity of bilateral hemispheric inflammation that should prompt broad diagnostic workup, as detailed herein, to assess for other etiologies.[6,7] Both phenotypes require similar diagnostic workup, although treatment paradigms may differ if patients with Type 2 have minimal functional deficits and are not clear candidates for hemispheric surgery. Although the availability of diagnostic testing and treatment may vary by region, patients should preferentially be cared for at centers with expertise in treating RS, or remotely access opinions or collaboration from expert physicians elsewhere if a patient is unable to receive care at such a center.

4.2 | Diagnostics: Assessment of mimics

A diagnostic approach is outlined by the statements, including the utility of physical examination, cerebrospinal

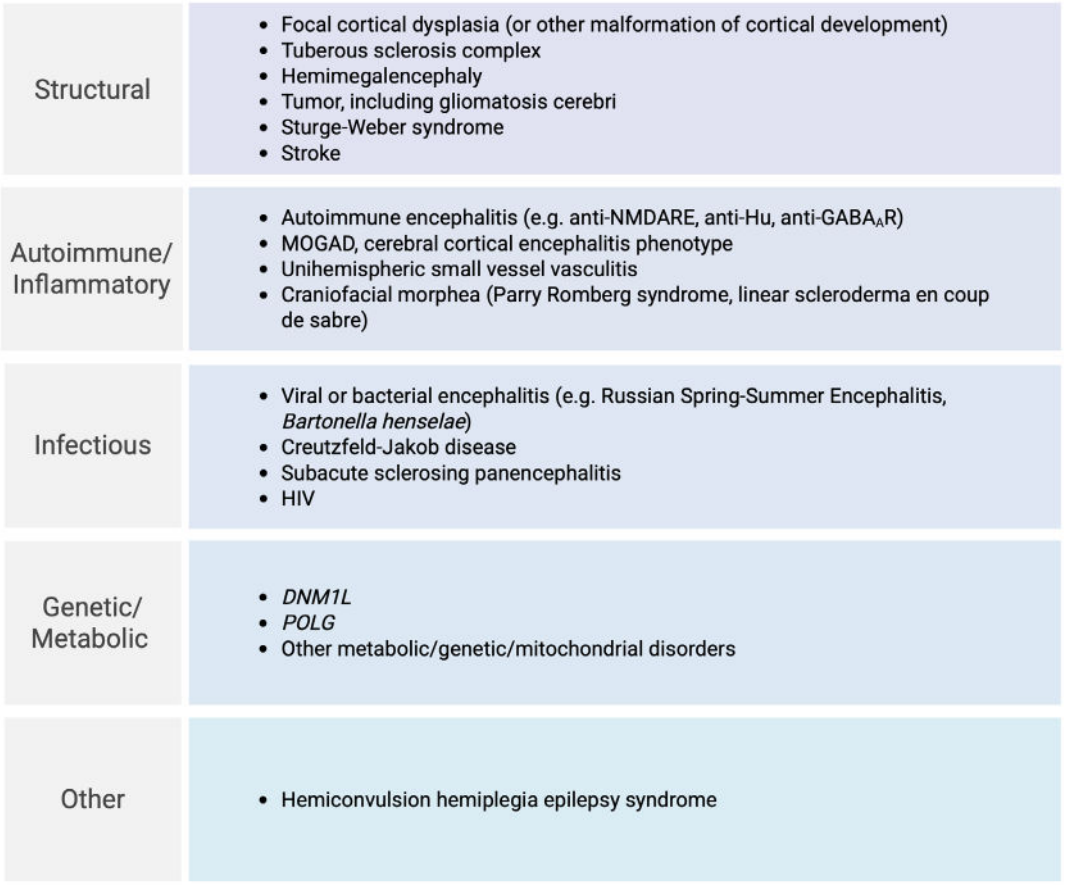


FIGURE 2 Differential diagnosis. A contemporary differential diagnosis by etiologic category is presented. *DNM1L*, dynamic 1 like; HIV, human immunodeficiency virus; MOGAD, myelin oligodendrocyte glycoprotein associated disease; anti-GABA$_A$, anti-γ-aminobutyric acid A receptor (encephalitis); anti-NMDARE, anti-*N*-methyl-D-aspartate receptor encephalitis; *POLG*, DNA polymerase subunit gamma. Created in BioRender. Stredny, C. (2026). https://BioRender.com/883mr0t.

fluid (CSF) and blood analysis, neuroimaging, electroencephalography (EEG), and biopsy in differentiating RS from mimicking diagnoses, particularly early in the disease course. Physical examination should include a detailed assessment for linear scleroderma or facial atrophy that can be seen in craniofacial morphea, such as Parry Romberg syndrome (progressive facial hemiatrophy, an inflammatory disorder considered to be a variant of localized scleroderma that often has intracranial manifestations mimicking RS).[9] Brain biopsy is not required if diagnostic criteria are otherwise fulfilled but may be additive to prompt earlier diagnosis in patients lacking cortical atrophy on magnetic resonance imaging (MRI) or epilepsia partialis continua (EPC) to fulfill diagnostic criteria. If pursued, open biopsy in a non-eloquent region guided by T2/fluid-attenuated inversion recovery (FLAIR) hyperintensity,[10] or fluorodeoxyglucose (FDG)–positron emission tomography (PET) hypometabolic region if absent,[11] may increase yield given established patchy pathology,[12] although histopathologic findings are not completely specific to RS.[13] CSF and serum analysis for other autoimmune/inflammatory etiologies and metabolic and infectious studies should be considered in all patients, with genetic testing and more comprehensive rheumatologic and metabolic evaluation in select patients based on age and features of presentation. CSF studies may be bland or nonspecific, including elevated neopterin or positive oligoclonal bands,[14–16] but positive serum/CSF antibodies (e.g., anti-*N*-methyl-D-aspartate receptor [NMDAR] or anti-myelin oligodendrocyte glycoprotein [MOG]), infectious testing, or pathogenic genetic variants would not be expected in RS. MRI and EEG are core diagnostics in RS, and FDG-PET may have utility in assessing for holohemispheric hypometabolism, although the focal hypometabolism that may be seen early in RS lacks specificity and can be seen with other etiologies, including focal cortical dysplasia.[11,17] A diagnostic algorithm (Figure 1) extrapolated from these statements, as well as an updated differential diagnosis expanding from that presented in a 2005 consensus statement[2] is

TABLE 7 Treatment: surgical.

Statement: These statements refer to a patient in whom the diagnosis of RS has been established	% Agree (number voting)
Functional hemispherectomy/hemispherotomy remains the most effective seizure treatment in RS	94.1 (34)
Particularly in older patients with no or mild functional deficits, if functional loss after functional hemispherectomy/hemispherotomy is unacceptable and provider/family is not agreeable to hemispherectomy/hemispherotomy, other palliative surgery options or neuromodulation may be considered for seizure control	78.8 (33)
Caution should be used when employing a prolonged immunotherapy trial in a patient who may be a functional hemispherectomy/hemispherotomy candidate as to not delay the most effective treatment	84.8 (33)
Available evidence suggests that language recovery after functional hemispherectomy/hemispherotomy of a dominant hemisphere in a child ≤6 years of age is expected to occur	100 (30)
Available evidence suggests that language recovery after functional hemispherectomy/hemispherotomy of a dominant hemisphere in a child 7–12 years of age may occur to some degree	90 (30)
Available evidence suggests that some degree of aphasia is expected after functional hemispherectomy/hemispherotomy of a dominant hemisphere in a child >12 years of age	90 (30)
In a younger patient (typically ≤6 years of age), expressive and/or receptive language recovery to some degree is often anticipated, regardless of language lateralization or hemisphere affected, and therefore intact language may not prevent functional hemispherectomy/hemispherotomy as it may in an older child/adult	93.8 (32)
In an older patient (typically 7–12 years of age), functional hemispherectomy/hemispherotomy may still be considered in dominant hemisphere disease though it may be difficult to predict post-surgical long-term language outcome	87.1 (31)
In an older patient (typically >12 years of age), intact or mildly impaired language may prevent functional hemispherectomy/hemispherotomy in dominant hemisphere disease if worsened deficit is deemed unacceptable	83.3 (30)
In an older patient (typically >6 years of age), severe language impairment may favor proceeding with functional hemispherectomy/hemispherotomy in dominant hemisphere disease	93.9 (33)
In a patient of any age, severe motor impairment (loss of fine finger movements of the contralateral hand) may favor proceeding with functional hemispherectomy/hemispherotomy	90.9 (33)
In a patient of any age, mild motor impairment (intact fine finger movements of the contralateral hand) may prevent functional hemispherectomy/hemispherotomy if worsened motor deficit is declined by the patient/family, but counseling that this motor impairment may be acquired from progression of the disease itself is imperative	93.9 (33)
In a younger patient (typically ≤6 years of age) with mild/moderate seizures, functional hemispherectomy/hemispherotomy may still be considered based on developmental and disease trajectory	93.9 (33)
In a patient of any age with frequent and severe seizures affecting quality of life, functional hemispherectomy/hemispherotomy may be considered if expected deficits are deemed acceptable	97.1 (34)
Candidacy for surgery based on current seizure burden and functional status should be continually re-evaluated throughout the disease course	100 (34)
In a seizure free patient with RS post-hemispherectomy/hemispherotomy, there should be consideration of initial anti-seizure medication wean by 3–6 months post-operatively, or sooner based on side effect profile and potential adverse effect on rehabilitation	93.6 (31)
Ongoing electrographic seizures in the disconnected hemisphere should not prevent proceeding with anti-seizure medication wean	93.6 (31)
MRI with volumetric MPRAGE and/or DTI (diffusion tensor imaging) sequences when available may be considered post-hemispherectomy/hemispherotomy, particularly in patients with persistent clinical seizures	100 (33)
In a patient with ongoing electroclinical seizures from the disconnected hemisphere, repeat surgery to disconnect any remaining interhemispheric connections based on MRI (including volumetric MPRAGE and/or DTI (diffusion tensor imaging) sequences when available) should be considered	87.5 (32)
The additional value of anatomic hemispherectomy after functional hemispherectomy/hemispherotomy in a patient with ongoing electroclinical seizures is unclear and is associated with potential side effects of hydrocephalus and/or superficial hemosiderosis	87.5 (32)
MRI T2/FLAIR changes in the disconnected hemisphere should not prompt immunotherapy trials	78.8 (33)
After anatomic hemispherectomy, brain MRI should be considered to monitor for hydrocephalus and/or superficial hemosiderosis	93.9 (33)

TABLE 7 (Continued)

Statement: These statements refer to a patient in whom the diagnosis of RS has been established	% Agree (number voting)
Post-operatively, inpatient and outpatient rehabilitation services are essential to support functional recovery	100 (33)

Note: Age indicated refers to age at the time of surgery. It is recognized that consideration of whether and when to proceed with functional hemispherectomy/hemispherotomy is complex and often based on a combination of motor, language, and cognitive status as well as seizure burden and patient/family values, rather than any single factor. For each statement, experts considered how each of these domains individually influences the surgical decision.

Abbreviations: FLAIR, fluid-attenuated inversion recovery; MPRAGE, magnetization-prepared rapid gradient-echo; MRI, magnetic resonance imaging; RS, Rasmussen syndrome.

TABLE 8 Future directions.

Statement	% Agree (number voting)
Future research on CSF biomarkers and advanced imaging and EEG signal analysis could be beneficial to prompt earlier diagnosis	100 (32)
Developing an international registry assessing the efficacy and tolerability of immunotherapy in RS is important to strengthen the existing evidence in the field	97.0 (33)
There is a need for additional, relevant animal models to test optimal immunotherapy strategies at varying points of disease progression	90.0 (30)
Brain tissue after biopsy or surgery should be saved and/or forwarded to relevant biobanks focused on RS research	97.1 (35)

Abbreviations: CSF, cerebrospinal fluid; EEG, electroencephalography; RS, Rasmussen syndrome.

included (Figure 2). Other diagnostic tests proposed but not reaching consensus threshold include CSF neopterin, CSF cytology and/or flow cytometry, serum amino acids, urine organic acids, and copy number variant analysis (e.g., chromosomal microarray).

4.3 | Disease monitoring in established RS

In addition to standard clinic visits for treatment monitoring and neurological exams, with special attention to unilateral weakness and language, the statements summarize a disease-monitoring strategy. Neuropsychological testing is suggested in all patients, at intervals of 6 months to 2 years, depending on the rate of disease progression and clinical availability, with important time points including baseline testing, before/after major treatment changes, and pre- and post-operative, if applicable. Notably, neuropsychological testing as well as motor exam may be influenced by frequent seizures and a post-ictal period, and, as such, results should be interpreted accordingly and trended serially.[2] EEG is suggested to establish the diagnosis and can be monitored over time as clinically indicated for seizure characterization and pre-surgical evaluation, although no other RS-specific monitoring parameters were suggested. Nonlateralized or generalized interictal discharges and ictal onsets may influence surgical decision-making and prompt reconsideration of the differential diagnosis, particularly if seen early in the disease course. Data on the implications of nonlateralizing EEG features on seizure outcome post-operatively exhibit limitations, but largely suggest that non-lateralized EEG features are not clearly predictive of surgical outcome.[19–26] Serial brain MRI studies are suggested in all patients, more frequently in early disease and spaced to less frequent or as-needed studies once clinical and radiographic stability has been obtained based on evidence that the majority of volume loss occurs early in the disease process.[27] Volumetric analysis may offer more refined trends over time,[27,28] as well as identify more subtle changes, but it is potentially subject to confounders such as hydration status, effect of steroids/anti-seizure medications (ASMs) on brain volume, and comparison across different scanners as well as having limited availability in many regions. Similarly, language dominance ancillary testing may be unavailable, and is deemed by some to be unnecessary if surgery would proceed regardless of the result; clinical

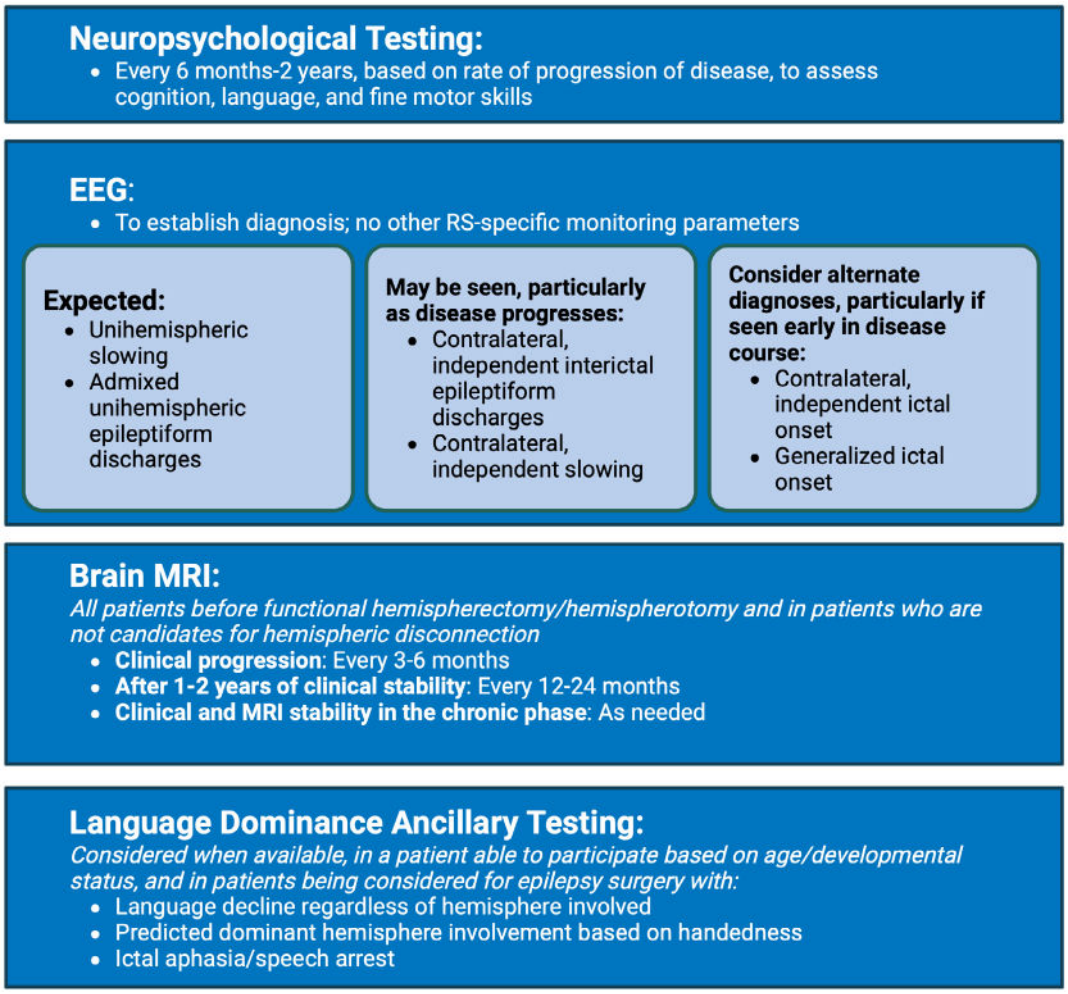


FIGURE 3 Disease monitoring. In addition to standard clinic visits for ASM monitoring and neurological exams, with special attention to unilateral weakness and language, the statements summarize disease-monitoring assessments, including neuropsychological testing, MRI, EEG and language dominance ancillary testing. ASM, anti-seizure medication; EEG, electroencephalography; MRI, magnetic resonance imaging. Created in BioRender. Stredny, C. (2026). https://BioRender.com/ek71pgx.

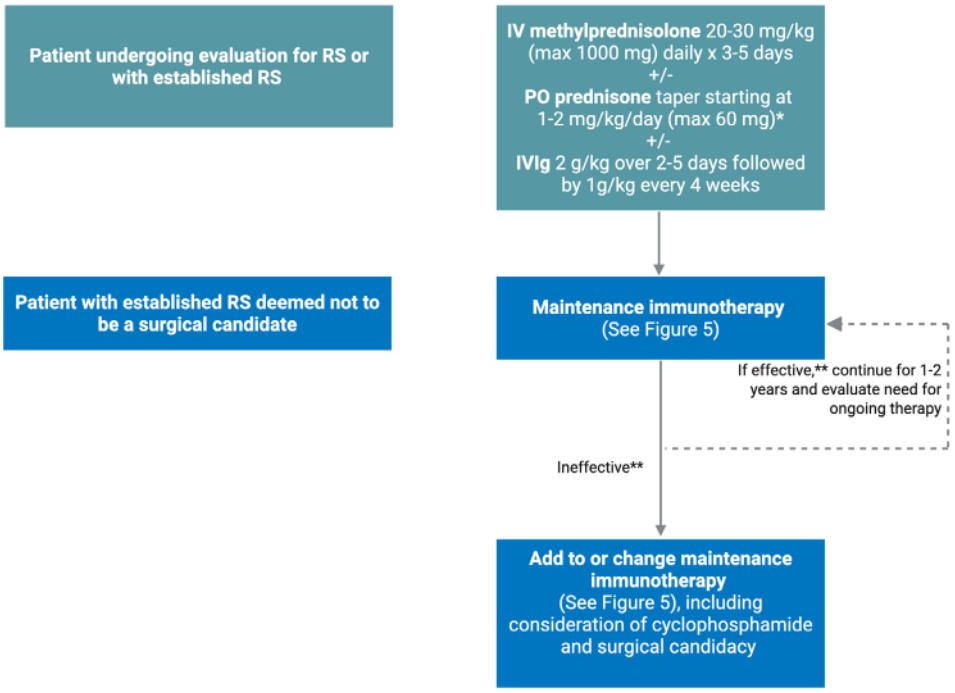
scenarios in which this is highest yield per expert consensus are included. Figure 3 summarizes disease monitoring in RS.

4.4 | Treatment: Non-surgical/ non-immunomodulatory treatment

There is no evidence to suggest that particular ASMs are more effective in RS, and, as such, use of ASMs in RS requires an approach similar to that used in other drug-resistant epilepsy syndromes. EPC is often refractory to ASMs and immunotherapy, although may respond at least partially in some cases.[29,30] Consideration of use of botulinum toxin or repetitive transcranial magnetic stimulation for EPC did not reach consensus.

4.5 | Treatment: Immunomodulatory treatment

Statements in this section provide general guidelines based on available evidence, but the experts highlight that this evidence is limited to mostly case reports or series, a single randomized controlled but probably underpowered trial,[31] and a systematic review.[32] Response to immunotherapy is often transient or incomplete in RS, and a robust response may prompt consideration of an alternative diagnosis, particularly if the aforementioned diagnostic algorithm (Figure 1) has not been completed.[33–35] Intravenous (IV) corticosteroids are preferred as first-line, acute immunotherapy for seizure exacerbations and status epilepticus, with or without the addition of IV immunoglobulin (IVIg). Brief oral steroid tapers or monthly pulses are employed while other maintenance



Some institutions alternatively consider monthly IV methylprednisolone pulses of 20-30 mg/kg/dose (max 1000 mg) x 3-5 days monthly (% Agreement = 70%, not reaching consensus*)

Effective Immunotherapy:
1. Seizure frequency or intensity decreased by at least 50% and deemed to substantially improve patient quality of life and/or decreased progression to bilateral tonic-clonic seizures AND
2. Stability of functional status as demonstrated by stable neurologic exam, stable brain MRI, and/or stable or improved cognitive/language skills on neuropsychologic testing

Ineffective Immunotherapy:
1. Failure to improve seizures by at least 50% and/or to improve patient quality of life AND/OR
2. Worsening weakness on 2 serial exams, worsening hemiatrophy on 2 serial MRIs, and/or worsening neuropsychological testing

FIGURE 4 Immunotherapy treatment algorithm. An immunotherapy treatment algorithm in suspected and confirmed RS is proposed. IV, intravenous; IVIg, intravenous immunoglobulin; MRI, magnetic resonance imaging; PO, *per os* or by mouth; RS, Rasmussen syndrome. Created in BioRender. Stredny, C. (2026). https://BioRender.com/1ko65re.

therapy takes effect, including IVIg,[31] azathioprine[36] or mycophenolate, rituximab,[29] or adalimumab.[37] In addition, tacrolimus may offer disease control similar to that of IVIg but with more side effects;[31] a statement regarding favorability of tacrolimus vs IVIg did not reach consensus, although the expert panel and international survey respondents do not indicate common use of tacrolimus in their clinical practice in most regions.[38] There is limited evidence on use of each agent, with no trials to compare effectiveness or safety, and choice of agent is, therefore, based largely on the presence of systemic immune dysregulation, preferred route, regional availability, patient/family tolerance, and preference. Therapy should be continued for at least 1–2 years if effective, at which time the need for ongoing immunotherapy is reevaluated. If therapy is ineffective, adding or changing to another immunotherapy and/or reconsidering surgical candidacy is suggested. A summary of this therapeutic approach is extrapolated in an immunotherapy treatment algorithm (Figure 4) with consensus doses summarized (Figure 5).

4.6 | Treatment: Surgical

Although immunomodulatory treatment is often pursued, particularly in patients predicted to acquire significant functional deficits post-operatively, hemispheric disconnection remains the most effective seizure treatment in RS, with seizure-freedom rates approximating 75%.[19] Earlier time to surgery may be beneficial for seizure outcomes, although data are conflicting.[19] A score aiding in prediction of seizure outcome after functional hemispherectomy/hemispherotomy (HE) has been developed,[20] but it has not been clearly validated in an RS cohort.[39]

New functional deficits are expected post-disconnection if not acquired already from the disease itself. Studies suggest that patients with left hemispheric RS have impaired expressive and receptive language outcomes after HE, and the effects of age at seizure onset and age at surgery, as well as laterality, are often not clearly associated with language outcome in larger studies.[40] However, all of these studies are limited by the fact

Maintenance Immunotherapy	Suggested Dosing Regimen
IVIg	1 g/kg every 4 weeks
Azathioprine	1-2.5 mg/kg daily
Mycophenolate	400-600 mg/m^2/dose (max 1000 mg) twice daily, dosed as mofetil
Rituximab	375-750 mg/m^2 (max 1000 mg) on day 0 and day 14 or 375mg/m^2 (max 1000 mg) weekly for 4 weeks
Adalimumab	24 mg/m^2/dose (max 40 mg/dose, rounded to the nearest auto-injector/prefilled syringe dose) given once every 2 weeks

FIGURE 5 Maintenance immunotherapy agents and dosing consensus. Dosing regimens extrapolated from previously published series are summarized for common maintenance regimens in RS.[29,31,32,36–37] If the initial maintenance medication is ineffective, then replacement with another may be a reasonable next option. In addition to those medications listed, tacrolimus may offer similar disease control to IVIg but more side effects[31]; this is used by some, although the expert panel and international survey respondents do not indicate common use of tacrolimus in their clinical practice. These doses serve as guidelines based on available evidence and require individualization to the specific patient based on clinical judgement of the treating physician. IVIg, intravenous immunoglobulin; RS, Rasmussen syndrome. Created in BioRender. Stredny, C. (2026). https://BioRender.com/rfcwp4z.

that patients predicted to have unacceptable language outcome may not undergo surgery,[41] and, as such, there remain generally accepted age guidelines and anticipated language recovery proposed by the expert panel.[42] These are again guidelines as there are notable exceptions with several reported cases of language recovery to some degree in dominant hemisphere disease after HE in late childhood/adolescence.[43] Beyond language, other cognitive domains are important considerations, including memory, that may be aided by earlier surgery.[43,44] Loss of fine motor control of the contralateral hand is anticipated, and requires additional consideration by the patient/family.[41] If predicted language/cognitive or motor deficits are felt to be unacceptable to the patient/family, other palliative resection options, corpus callosotomy, or neuromodulation may be an option, but chance of seizure freedom is extremely low and patients should be counseled as such.[19,45] In addition, it is imperative to counsel that functional deficits similar to post-HE deficits may be acquired from the disease itself in many patients over time, in addition to potential secondary injury to the contralateral hemisphere and associated cognitive/developmental sequalae in those who do not undergo surgery. Surgical candidacy should be continually re-evaluated based on ongoing seizure burden and functional status as summarized in Figure 6.

After hemispheric disconnection, the expert panel supports weaning ASMs, even in the presence of ongoing interictal epileptiform discharges or electrographic seizures in the disconnected hemisphere, as this is an expected finding as long as it is not associated with spread to the other hemisphere or clinical symptoms.[46] If ongoing electroclinical seizures are present and neuroimaging detects retained interhemispheric connections, targeted revision of the disconnection may be considered, and additive value vs potential increased risk of side effects, namely hydrocephalus, with conversion to anatomic HE is currently unclear and additional data are needed.[47]

4.7 | Limitations

Despite reminder emails, two and three experts, respectively, did not complete Rounds 2 and 3. However, this represents a >90% response rate and is overall felt to be representative of the panel. The care of RS is multidisciplinary and we, therefore, aimed to capture this on the expert panel, although it consists predominantly of neurologists/epileptologists/neuroimmunologists with relatively less representation in other subspecialities, including neurosurgery, rheumatology, neuropsychology, and neuroradiology. We aimed to create a statement generalizable to a global population. Although the expert panel contains members from five continents, the steering committee is composed of United States- and European Union/United Kingdom-based physicians only, which may limit this scope. Given the length of the current consensus statement, we were limited in expanding statements in some areas of interest. For example, future consensus guidelines may include a specific MRI protocol and suggested neuropsychological tests in RS. Of note, perhaps the most clinically relevant limitation of this Delphi procedure is

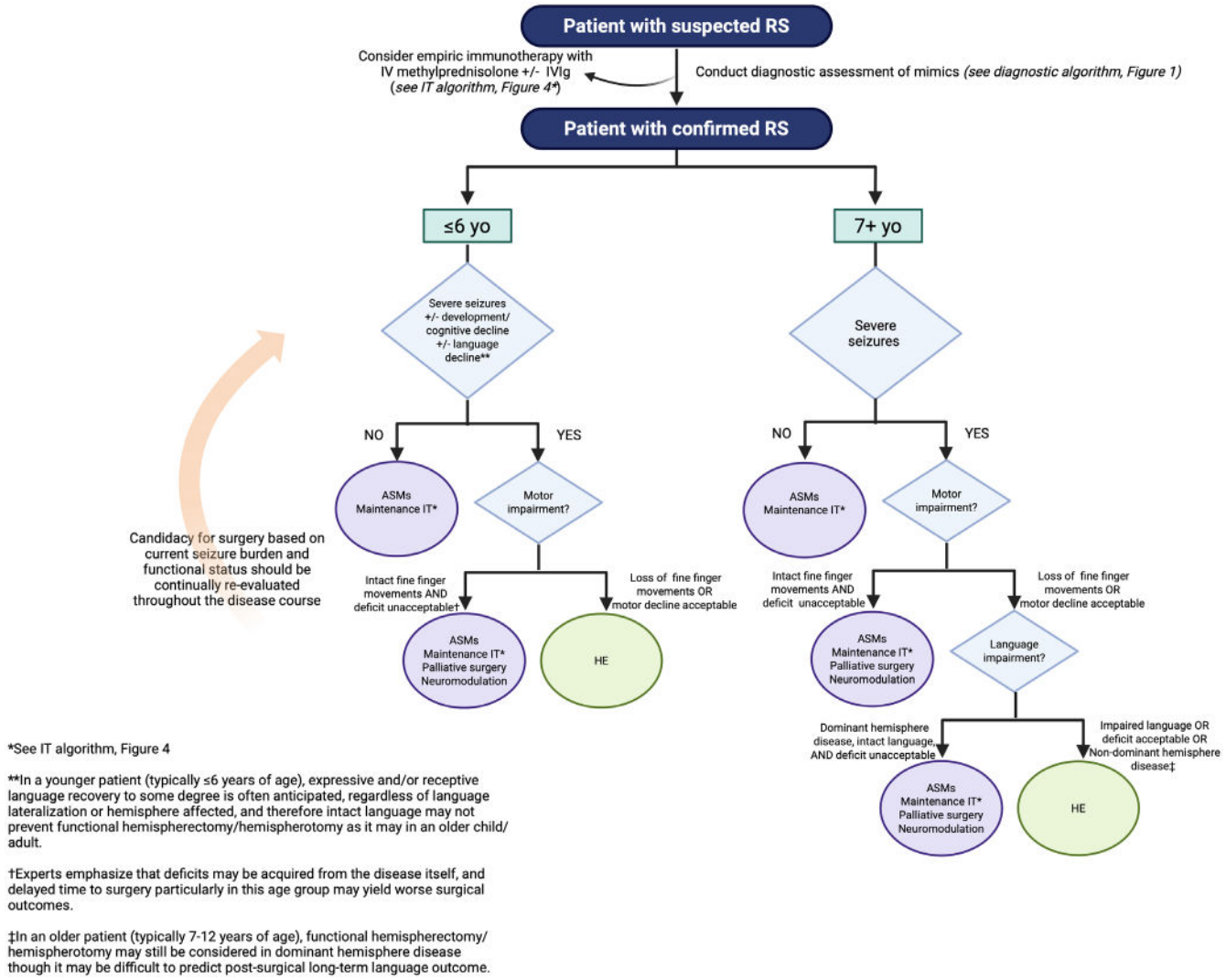


FIGURE 6 Surgical and immunotherapy treatment approach. This includes an algorithm for determining hemispheric disconnection versus medical management/palliative surgery based on age, seizure burden, developmental trajectory, motor and language deficits. ASM, anti-seizure medication; HE, hemispherotomy/hemispherectomy; IT, immunotherapy; IV, intravenous; IVIg, intravenous immunoglobulin; RS, Rasmussen syndrome. Created in BioRender. Stredny, C. (2026). https://BioRender.com/4v8p3wz.

the spectrum of disease and tailored nature of treatment decisions in RS for each patient. As such, although this statement acts as a guide for international physicians managing RS, all decisions must remain individualized and patient/family-centered.

5 | CONCLUSION

We propose expert consensus statements, as well as extrapolated diagnostic and treatment algorithms, in an effort to standardize management with the currently available evidence. Given the spectrum of outcomes and heterogeneity from patient to patient, these algorithms aim to serve as guidelines rather than strict rules as we highlight that the care of this refractory epilepsy syndrome requires individualized management based on patient/family values. Future directions include multicenter studies to further elucidate the underlying pathophysiology and earliest immunologic change, and potential to target better-tolerated, more effective treatment. Interventional trials using innovative trial designs are needed to increase the level of evidence for immunotherapy in RS and ultimately have the potential to improve outcomes.

AUTHOR CONTRIBUTIONS

Coral M. Stredny: conceptualization; data curation; formal analysis; methodology; project administration; investigation; supervision; writing – original draft preparation; writing – review and editing. Claude Steriade, Maria T. Papdopoulou, Suresh Pujar, Marios Kaliakatsos, Stuart Tomko, Tilman Polster, and Ronny Wickström: conceptualization; formal analysis; methodology; investigation; writing – review and editing. Christopher Cortina and Bo

Zhang: conceptualization; formal analysis; methodology; investigation; writing – original draft preparation; writing – review and editing. International Rasmussen Syndrome Consensus Group: formal analysis; investigation; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

The authors declare the following financial interests/personal relationships that may be considered as potential competing interests. Hesham Abboud is a speaker for Biogen, Genentech, BMS, TG Therapeutics, and Amgen/Horizon. He serves as a consultant for Genentech, Amgen/Horizon, Alexion, and UCB. He receives research support from Genentech, BMS, Novartis, Sanofi, UCB, Corevitas, and the Guthy-Jackson Charitable Foundation. He has served as a member of advisory board for Alpine Pharma, Cycle Pharma, and Axonics. He is an editorial board member of *Neurology* and receives royalties from UpToDate. Mary Connolly receives grant funding from the National Institutes of Health (NIH), Xenon Pharmaceuticals, Zogenix International, BC Children's Hospital Research Institute, SickKids Foundation, Eisai, Epygenix Therapeutics, Takeda Pharmaceuticals, Marinus Pharmaceuticals, Dravet syndrome Foundation, GRIN Therapeutics, and Jazz Pharmaceuticals. She has received honoraria for speaking at educational event and honoraria given to Epilepsy Research & Development Fund from UCB and Jazz Pharmaceuticals. Tilman Polster has received honoraria for serving on advisory board for Takeda and Desitin and speaker's fees from Jazz, Eisai, and UCB. Suresh Pujar has received honoraria for serving on advisory board for UCB, and speaker's fees from UCB and Danone. Coral M. Stredny receives grant support from the Pediatric Epilepsy Research Foundation, Patient-Centered Outcomes Research Institute, Eunice Kennedy Shriver National Institute of Child Health and Human Development, and National Centre for Advancing Translational Sciences of the National Institutes of Health. She is an unpaid member of the medical and scientific advisory boards of the Autoimmune Encephalitis Alliance and New Onset Refractory Status Epilepticus (NORSE) Institute. She has participated in a clinical trial (unpaid) supported by Roche. Claude Steriade receives institutional salary support from The Epilepsy Study Consortium, on behalf of Alterity, Cerebral, Cerevel, Eliem, Equilibre, Janssen, Longboard, Marinus, Neurocrine, Neuroelectrics, Receptor, SK Life Sciences, Supernus, UCB, and Xenon. She serves as an Editor for Dynamed, receives grants from National Institute of Neurological Disorders and Stroke, Parekh Institute for Interdisciplinary Neurology, American Epilepsy Society, and UCB. She has served as an Expert Witness for the U.S. Department of Justice and has received compensation for speakers bureau for SK Life Sciences and Neurelis. She has consulted for Epitel Inc. and Jazz Pharmaceuticals. Yukitoshi Takahashi receives grant support from Grants-in-aid for Scientific Research, MHLW Research program on rare and intractable diseases, and Japan Epilepsy Research Foundation. Ronny Wickström has received honoraria for serving on advisory boards for Jazz Pharmaceuticals, GW Pharma, and Octapharma, and speaker's fees from Eisai, UCB, Sobi, Jazz Pharmaceuticals, and Sanofi-Genzyme. E. Ann Yeh has received research funding from National MS Society, Consortium of Multiple Sclerosis Centres, Canadian Institutes of Health Research, NIH, OIRM, Stem Cell Network, Centre for Brain and Mental Health Chase an Idea, SickKids Foundation, Rare Diseases Foundation, MS Scientific Foundation, McLaughlin Centre, Leong Centre, Peterson Foundation, and Garry Hurvitz Centre for Brain and Mental Health, and investigator initiated research funding from Biogen; she provided scientific advisory for Hoffman-LaRoche and Alexion and serves on the Data Safety and Monitoring Board of Pipeline Therapeutics. She has received speaker honoraria from Biogen, Johns Hopkins University, Saudi Epilepsy Society, New York University, MS-ATL; ACRS, PRIME, CNPS. She is the co-editor in chief, *Multiple Sclerosis and Related Disorders,* governing council for CANTRAIN, and steering committee member for Rare-Kids CAN, IMSVisual, and OMSInternational. The remaining authors have no conflicts of interest. Medical treatments discussed represent off-label uses.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request, and subject to review and approval of the Boston Children's Hospital Institutional Review Board.

ETHICS STATEMENT

We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines. This study was

reviewed and considered exempt by the Boston Children's Hospital Institutional Review Board.

ORCID

Coral M. Stredny https://orcid.org/0000-0003-1176-640X
Claude Steriade https://orcid.org/0000-0001-6799-9005
Maria T. Papadopoulou https://orcid.org/0000-0002-2076-5006
Suresh Pujar https://orcid.org/0000-0002-9894-4194
Marios Kaliakatsos https://orcid.org/0000-0001-6299-9866
Stuart Tomko https://orcid.org/0000-0001-9199-8766
Tilman Polster https://orcid.org/0000-0002-9531-7312
Ronny Wickström https://orcid.org/0000-0002-1183-150X

REFERENCES

1. Varadkar S, Bien CG, Kruse CA, Jensen FE, Bauer J, Pardo CA, et al. Rasmussen's encephalitis: clinical features, pathobiology, and treatment advances. Lancet Neurol. 2014;13:195–205.
2. Bien CG et al. Pathogenesis, diagnosis and treatment of Rasmussen encephalitis: a European consensus statement. Brain. 2005;128:454–71.
3. Olson HE, Lechpammer M, Prabhu SP, Ciarlini PD, Poduri A, Gooty VD, et al. Clinical application and evaluation of the Bien diagnostic criteria for Rasmussen encephalitis. Epilepsia. 2013;54:1753–60.
4. Gattrell WT, Logullo P, van Zuuren EJ, Price A, Hughes EL, Blazey P, et al. ACCORD (ACcurate COnsensus reporting document): a reporting guideline for consensus methods in biomedicine developed via a modified Delphi. PLoS Med. 2024;21:e1004326.
5. Fauser S, Elger CE, Woermann F, Bien CG. Rasmussen encephalitis: predisposing factors and their potential role in unilaterality. Epilepsia. 2022;63:108–19.
6. Oguni H, Andermann F, Rasmussen TB. The syndrome of chronic encephalitis and epilepsy. A study based on the MNI series of 48 cases. Adv Neurol. 1992;57:419–33.
7. Bien CG, Widman G, Urbach H, Sassen R, Kuczaty S, Wiestler OD, et al. The natural history of Rasmussen's encephalitis. Brain. 2002;125:1751–9.
8. Muto A, Oguni H, Takahashi Y, Shirasaka Y, Sawaishi Y, Yano T, et al. Nationwide survey (incidence, clinical course, prognosis) of Rasmussen's encephalitis. Brain Dev. 2010;32:445–53.
9. Hixon AM, Christensen E, Hamilton R, Drees C. Epilepsy in parry-Romberg syndrome and linear scleroderma en coup de sabre: case series and systematic review including 140 patients. Epilepsy Behav. 2021;121:108068.
10. Bien CG, Urbach H, Deckert M, Schramm J, Wiestler OD, Lassmann H, et al. Diagnosis and staging of Rasmussen's encephalitis by serial MRI and histopathology. Neurology. 2002;58:250–7.
11. Lee JS, Juhász C, Kaddurah AK, Chugani HT. Patterns of cerebral glucose metabolism in early and late stages of Rasmussen's syndrome. J Child Neurol. 2001;16:798–805.
12. Pardo CA, Vining EPG, Guo L, Skolasky RL, Carson BS, Freeman JM. The pathology of Rasmussen syndrome: stages of cortical involvement and neuropathological studies in 45 hemispherectomies. Epilepsia. 2004;45:516–26.
13. Tröscher AR, Wimmer I, Quemada-Garrido L, Köck U, Gessl D, Verberk SGS, et al. Microglial nodules provide the environment for pathogenic T cells in human encephalitis. Acta Neuropathol. 2019;137:619–35.
14. Granata T et al. Rasmussen's encephalitis: early characteristics allow diagnosis. Neurology. 2003;60:133–44.
15. Sinclair AJ, Wienholt L, Tantsis E, Brilot F, Dale RC. Clinical association of intrathecal and mirrored oligoclonal bands in paediatric neurology. Dev Med Child Neurol. 2013;55:71–5.
16. Surana S, Rossor T, Hassell J, Boyd S, D'Arco F, Aylett S, et al. Diagnostic algorithm for children presenting with epilepsia partialis continua. Epilepsia. 2020;61:2224–33.
17. Rozenblum L, Chougar L, Bielle F, Mathon B, Navarro V, Dupont S, et al. Longitudinal PET and MRI evaluation in late onset Rasmussen encephalitis: a series of three cases. Eur J Neurol. 2025;32:e70266.
18. Longaretti F, Dunkley C, Varadkar S, Vargha-Khadem F, Boyd SG, Cross JH. Evolution of the EEG in children with Rasmussen's syndrome. Epilepsia. 2012;53:1539–45.
19. Harris WB et al. Seizure outcomes in children with Rasmussen's encephalitis undergoing resective or hemispheric epilepsy surgery: an individual participant data meta-analysis. J Neurosurg Pediatr. 2019;25:274–83.
20. Weil AG, Lewis EC, Ibrahim GM, Kola O, Tseng CH, Zhou X, et al. Hemispherectomy outcome prediction scale: development and validation of a seizure freedom prediction tool. Epilepsia. 2021;62:1064–73.
21. Kalbhenn T, Cloppenborg T, Woermann FG, Hagemann A, Polster T, Coras R, et al. Hemispherotomy in children: a retrospective analysis of 152 surgeries at a single center and predictors for long-term seizure outcome. Epilepsia. 2023;64:1800–11.
22. Abraham AP, Thomas MM, Mathew V, Muthusamy K, Yoganathan S, Jonathan GE, et al. EEG lateralization and seizure outcome following peri-insular hemispherotomy for pediatric hemispheric epilepsy. Childs Nerv Syst. 2019;35:1189–95.
23. Greiner HM, Park YD, Holland K, Horn PS, Byars AW, Mangano FT, et al. Scalp EEG does not predict hemispherectomy outcome. Seizure. 2011;20:758–63.
24. Wyllie E, Lachhwani DK, Gupta A, Chirla A, Cosmo G, Worley S, et al. Successful surgery for epilepsy due to early brain lesions despite generalized EEG findings. Neurology. 2007;69:389–97.
25. Döring S, Cross H, Boyd S, Harkness W, Neville B. The significance of bilateral EEG abnormalities before and after hemispherectomy in children with unilateral major hemisphere lesions. Epilepsy Res. 1999;34:65–73.
26. Moosa ANV, Gupta A, Jehi L, Marashly A, Cosmo G, Lachhwani D, et al. Longitudinal seizure outcome and prognostic predictors after hemispherectomy in 170 children. Neurology. 2013;80:253–60.
27. Wagner J, Schoene-Bake JC, Bien CG, Urbach H, Elger CE, Weber B. Automated 3D MRI volumetry reveals regional atrophy differences in Rasmussen encephalitis. Epilepsia. 2012;53:613–21.
28. Wang ZI, Krishnan B, Shattuck DW, Leahy RM, Moosa ANV, Wyllie E, et al. Automated MRI volumetric analysis in

patients with Rasmussen syndrome. AJNR Am J Neuroradiol. 2016;37:2348–55.
29. Jagtap SA, Patil S, Joshi A, Kurwale N, Jain V, Deshmukh Y. Rituximab in Rasmussen's encephalitis: a single center experience and review of the literature. Epilepsy Behav Rep. 2022;19:100540.
30. Chinchilla D, Dulac O, Robain O, Plouin P, Ponsot G, Pinel JF, et al. Reappraisal of Rasmussen's syndrome with special emphasis on treatment with high doses of steroids. J Neurol Neurosurg Psychiatry. 1994;57:1325–33.
31. Bien CG, Tiemeier H, Sassen R, Kuczaty S, Urbach H, von Lehe M, et al. Rasmussen encephalitis: incidence and course under randomized therapy with tacrolimus or intravenous immunoglobulins. Epilepsia. 2013;54:543–50.
32. Lagarde S, Boucraut J, Bartolomei F. Medical treatment of Rasmussen's encephalitis: a systematic review. Rev Neurol (Paris). 2022;178(7):675–91. https://doi.org/10.1016/J.NEUROL.2022.01.007
33. Gurcharran K, Karkare S. Anti-N-methyl-D-aspartate receptor encephalitis and Rasmussen-like syndrome: an association? Pediatr Neurol. 2017;66:104–7.
34. Greiner H, Leach JL, Lee KH, Krueger DA. Anti-NMDA receptor encephalitis presenting with imaging findings and clinical features mimicking Rasmussen syndrome. Seizure. 2011;20:266–70.
35. Valencia-Sanchez C, Guo Y, Krecke KN, Chen JJ, Redenbaugh V, Montalvo M, et al. Cerebral cortical encephalitis in myelin oligodendrocyte glycoprotein antibody-associated disease. Ann Neurol. 2023;93:297–302.
36. Pellegrin S, Baldeweg T, Pujar S, D'Arco F, Cantalupo G, Varadkar S, et al. Immunomodulation with azathioprine therapy in Rasmussen syndrome: a multimodal evaluation. Neurology. 2021;96:e267–e279.
37. Lagarde S, Villeneuve N, Trébuchon A, Kaphan E, Lepine A, McGonigal A, et al. Anti-tumor necrosis factor alpha therapy (adalimumab) in Rasmussen's encephalitis: an open pilot study. Epilepsia. 2016;57:956–66.
38. Stredny CM, Steriade C, Papadopoulou MT, Pujar S, Kaliakatsos M, Tomko S, et al. Current practices in the diagnosis and treatment of Rasmussen syndrome: results of an international survey. Seizure. 2024;122:153–64.
39. Doherty A, Knudson K, Fuller C, Leach JL, Wang AC, Marupudi N, et al. MRI and pathology comparisons in Rasmussen's encephalitis: a multi-institutional examination of hemispherotomy outcomes relative to imaging and histological severity. Childs Nerv Syst. 2024;40:1799–806.
40. Nahum AS, Liégeois FJ. Language after childhood hemispherectomy. Neurology. 2020;95:1043–56.
41. Ramantani G, Cserpan D, Tisdall M, Otte WM, Dorfmüller G, Cross JH, et al. Determinants of functional outcome after pediatric Hemispherotomy. Ann Neurol. 2024;95:377–87.
42. Lidzba K, Küpper H, Kluger G, Staudt M. The time window for successful right-hemispheric language reorganization in children. Eur J Paediatr Neurol. 2017;21:715–21.
43. Borne A et al. Cognitive outcome after left functional hemispherectomy on dominant hemisphere in patients with Rasmussen encephalitis: beyond the myth of aphasia. Patient series. J Neurosurg Case Lessons. 2022;4:CASE22410.
44. Pulsifer MB, Brandt J, Salorio CF, Vining EPG, Carson BS, Freeman JM. The cognitive outcome of hemispherectomy in 71 children. Epilepsia. 2004;45:243–54.
45. Casciato S, di Bonaventura C, Giallonardo AT, Fattouch J, Quarato PP, Mascia A, et al. Epilepsy surgery in adult-onset Rasmussen's encephalitis: case series and review of the literature. Neurosurg Rev. 2015;38:463–71.
46. Alzahrany M, Alnakhli R, Bingaman W, Wyllie E, Moosa AN. Epileptiform abnormalities in the disconnected hemisphere are common in seizure-free patients after hemispherectomy. Epileptic Disord. 2022;24:1–10.
47. Santos MV et al. Risk factors and results of hemispherotomy reoperations in children. Neurosurg Focus. 2020;48:E5.
48. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al. The REDCap consortium: building an international community of software platform partners. J Biomed Inform. 2019;95:103208. https://doi.org/10.1016/j.jbi.2019.103208
49. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009;42(2):377–81. https://doi.org/10.1016/j.jbi.2008.08.010

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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