Methimazole-induced remission rates in pediatric Graves' disease: a systematic review

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INTRODUCTION

Comparison of studies on remission rates in pediatric Graves' disease is complicated by lack of uniformity in treatment protocols, remission definition, and follow-up duration.

AIM

We performed a systematic review on remission rates in pediatric Graves' disease and attempted to create uniformity by recalculating remission rates based on an intention-to-treat analysis.

METHOD

PubMed and Embase were searched in August 2020 for studies on patients with Graves' disease:

- 2 to 18 years of age
- initially treated with methimazole or carbimazole for at least 18 months
- follow-up duration of at least 1 year after cessation of methimazole or carbimazole

All reported remission rates were recalculated using an intention-to-treat analysis.

RESULTS

Search yielded 1,890 articles of which 29 articles were included.
Consisted of 24 patient cohorts, with a total of 3,057 patients (82.6% female).
Methimazole or carbimazole was initially prescribed in 2,864 patients (93.7%).

Recalculation of reported remission rates based on intention-to-treat analysis resulted in an **overall remission rate of 28.8%** (829/2,880 patients, 24 patient cohorts).

Pooled remission rates based on treatment duration:

1.5-2.5 years	**23.7%**	(147/620 patients, 10 studies)
2.5-5 years	**31.0%**	(566/1,826 patients, 10 studies)
5-6 years	**43.7%**	(76/174 patients, 2 studies)
9 years	**75%**	(28 patients, single study)

Figure:
Remission rate related to treatment duration. Size of the bubble equals the size of the patient population. Prospective studies comparing standard and long-term treatment durations displayed in red and green.

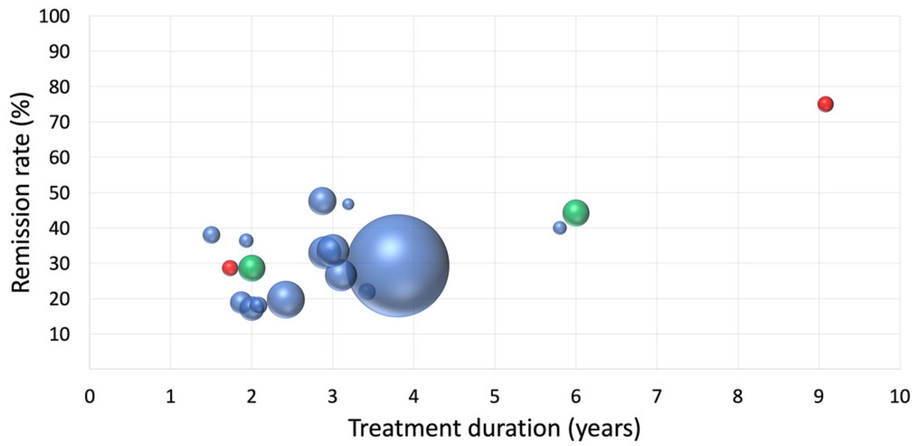

Table:
Reported adverse events in 2,377 patients.

Adverse event	*n* (%)*
Cutaneous reaction	267 (11.2)
Arthralgia/myalgia	34 (1.4)
Neutropenia/leukopenia	25 (1.1)
Liver transaminase elevation	24 (1.0)
Headache	18 (0.8)
Gastrointestinal complaints	12 (0.5)
Agranulocytosis	7 (0.3)
Hair loss	6 (0.3)
Fever	5 (0.2)
Sore throat	4 (0.2)

CONCLUSIONS

Using a standardized calculation, the overall remission rate in methimazole treated pediatric Graves' disease is 28.8%. A few small studies indicate that longer treatment increases the remission rate. However, evidence is limited and further research is necessary to investigate the efficacy of longer treatment durations.

Study recently published in
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