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Prognostic Factors and Therapeutic Response During Basedow Desease: Study of 3007 Patients Followed Over 25 Years at the Clinique Médicale II (CHAN), Dakar

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Abstract

Introduction: Basedow (Graves') desease remains the leading cause of hyperthyroidism (40–60%), affecting mainly young women with a prevalence varying according to the iodization of the populations. ***Methods****:* Retrospective, descriptive and analytical study, covering 25 years (01/01/1998–31/12/2023) at the Medical Clinic II/CHAN; inclusion of all hyperthyroidism files related to Graves' disease, operative criteria and standardized definitions; descriptive and comparative analysis. ***Results****:* Our cohort included 3007 patients, with a female predominance; the most common initial clinical signs were goiter (nearly 89%) and exophthalmos (approximately 69%). Under ATS, a decrease in pulse rate and weight regain were observed at 18 months. Overall outcomes showed failure in 48–49% of cases, remission in nearly 33%, and recurrence around 18%; cardiac complications included cardiothyreosis in nearly 6% and acute thyrotoxic crisis in 0.3%. The worst outcomes were associated with grade 3 goiter, exophthalmos, a consultation time > 12 months and a loading dose > 40 mg/day. Conversely, early initiation of maintenance treatment (<6 months) was associated with more remissions and fewer recurrences. ***Conclusion****:* Rapid initiation and reasoned adjustment of ATS, coupled with stratification by severity (goiter, orbitopathy, delay), optimize the response and limit surgery; these levers can be used in resource-constrained systems.

Keywords: Graves' Disease, Hyperthyroidism, Acute Thyrotoxic Crisis, Pulse Rate, Weight Regain.

I. INTRODUCTION

Hyperthyroidism affects 1–2% of women and results, in 40–60% of cases, from Graves' disease. It is an autoimmune disease manifesting mainly by thyrotoxicosis, diffuse goiter, exophthalmos, ± pretibial myxedema [1–3] and positive anti-TSH receptor antibodies (TRAK) which confirm autoimmunity [4–5]. The global distribution is heterogeneous: in Iceland (approximately 80% of hyperthyroidism), in France (44.2%) and in Senegal (70–88%) [6–7]. Therapeutic options are: synthetic antithyroid drugs (SAD), surgery and iodine 131 [8–11]. In Senegal, the first line is classically based on 12–18 months of SAD [9]. With a variable evolution, Diédhiou *et al.,* Reported in their study a failure rate of 65.9%, a relapse of 8.6% and a sustained remission of 25.5% [12]. The objective of our study was to describe the clinical and therapeutic profile and to identify the prognostic factors for long-term response in Graves' disease patients followed in Dakar over 25 years.

II. METHODS

This is a retrospective descriptive and analytical study of records, carried out at the Medical Clinic II of the Abass Ndao University Hospital (Dakar) from 01/01/1998 to 31/12/2023. All cases of hyperthyroidism related to Graves' disease, confirmed clinically and/or paraclinically (TRAK, ultrasound), were included, with standardized definitions of outcomes (remission, recurrence, failure) and iatrogenic hypothyroidism. Socio-demographic, clinical, paraclinical and therapeutic data, as well as complications and recourse to surgery, were analyzed by descriptive statistics,

subgroup comparisons and estimation of the risks of adverse outcomes and surgery.

III. RESULTS

Over the entire period, 3007 patients were followed for Graves' disease, with a clear female predominance and initial presentations dominated by goiter (WHO grading) and orbital involvement (exophthalmos). Medical treatment with synthetic antithyroid drugs (SAD) was the first-line strategy. Clinical and biological evolution showed, on average, a slowing of the heart rate, weight gain, a reduction in SAD doses and a decrease in free T4 over the first 18 months. Furthermore, the implementation of maintenance treatment between 3 and 6 months concerned the majority of patients. In patients followed regularly, the outcomes under SAD were divided into failure (48.71%; 586 patients), sustained remission (33%; 397 patients) and recurrence (18.29%; 220 patients). After failure, 62.63% (367/586) were operated on, while radioactive iodine treatment remained exceptional (3 cases). Figure 1 represents the distribution of patients according to the outcome of the disease under medical treatment by ATS summarizes these trajectories; the factors associated with failures and remissions are detailed in tables I and II.

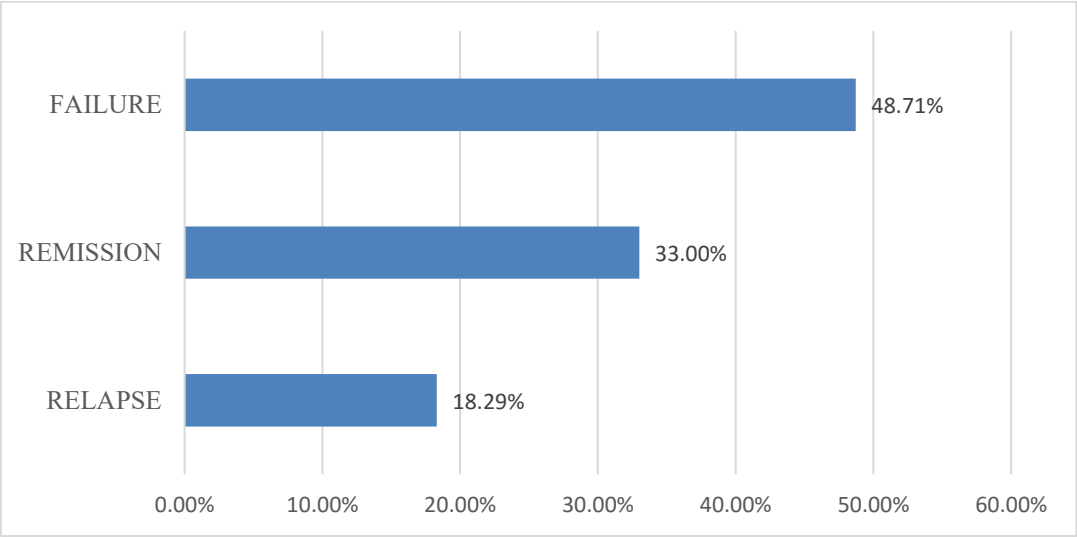

Figure 1: Distribution of patients according to the outcome of the disease under medical treatment by ATS

Table I: Frequency of failure of medical treatment according to profile

Settings		**Failure**	
		No (617)	**Yes (586)**
Sex	Woman (927)	488 (79.1%)	439 (74.9%)
	Man (276)	129 (20.9%)	147 (25.1%)
Age group	Children (64)	35 (5.7%)	29 (4.9%)
	Teenagers (148)	60 (9.7%)	88 (15.0%)
	Adults (966)	509 (82.5%)	457 (78.0%)
	Subjects ages (25)	13 (2.1%)	12 (2.0%)
Grade	0 (49)	33 (5.3%)	16 (2.7%)
	1 (192)	121 (19.6%)	71 (12.1%)
	2 (641)	330 (53.5%)	311 (53.1%)
	3 (321)	133 (21.6%)	188 (32.1%)
Exophthalmos	Yes (351)	201 (32.6%)	150 (25.6%)
	No (852)	416 (67.4%)	436 (74.4%)
Irritating thorn	Yes (606)	318 (51.5%)	288 (49.1%)
	No (597)	299 (48.5%)	298 (50.9%)
Consultation deadline	<12 months (697)	363 (58.8%)	334 (57.0%)
	>12 months (506)	254 (41.2%)	252 (43.0%)
Attack dose	<20 (136)	80 (13.0%)	56 (9.6%)
	20-40 (792)	413 (67.0%)	379 (64.7%)
	>40 (274)	123 (20.0%)	151 (25.8%)
Maintenance treatment	No (207)	6	62
	Yes (928)	75 (12.3%)	132 (25.2%)

Table II: Frequency of Remission to medical treatment according to the profile

Settings		Remission	
		No(806)	**Yes(397)**
Sex	Woman (927)	609(75.6%)	318 (80.1%)
	Man (276)	197 (24.4%)	79 (19.9%)
Age group	Children (64)	45 (5.6%)	19 (4.8%)
	Teenagers (148)	107 (13.3%)	41 (10.3%)
	Adults (966)	638(79.2%)	328(82.6%)
	Subjects ages (25)	16 (2.0%)	9 (2.3%)
Grade	0 (49)	24 (3.0%)	25 (6.3%)
	1(192)	105 (13.0%)	87 (21.9%)
	2(641)	432 (53.6%)	209(52.6%)
	3(321)	245 (30.4%)	76 (19.1%)
Exophthalmos	Yes (351)	216 (26.8%)	135 (34.0%)
	No (852)	590(73.2%)	262(66.0%)
Irritating thorn	Yes (606)	402(49.9%)	204(51.4%)
	No (597)	404(50.1%)	193 (48.6%)
Consultation deadline	<12 months (697)	450(55.8%)	247(62.2%)
	>12 months (506)	356(44.2%)	150 (37.8%)
Attack dose	<20(136)	82 (10.2%)	54 (13.6%)
	20-40 (792)	521 (64.7%)	271 (68.3%)
	>40 (274)	202(25.1%)	72 (18.1%)
Maintenance treatment	No (207)	65	3
	Yes (928)	166 (22.4%)	41 (10.4%)

Acute complications were infrequent: Cardiothyreosis remained rare (approximately 6%) but clinically notable, and acute thyrotoxic crisis was exceptional (9/3007; 0.3%). Among the factors explored, only exophthalmos was significantly associated with the crisis (present in 100% of cases vs. 68.5% without crisis; $p = 0.042$). A trend was observed for a consultation time > 12 months (66.7% of crises vs. 35.9%; $p = 0.054$). Other parameters (sex, age, goitre grade, loading dose, maintenance treatment) were not significantly associated ($p > 0.05$).

IV. DISCUSSION

Our cohort of 3007 patients, followed for twenty-five years in an urban African environment, constitutes a solid observatory of Graves' disease. It confirms the clear female predominance and the high frequency of goiter and orbital involvement, consistent with the profiles described in the international and regional literature [1–11,14,16,18,19]. Under synthetic antithyroid drugs, the evolution is organized into three major trajectories; failure, lasting remission, recurrence; with proportions close to local series, but more favorable than certain historical Senegalese cohorts where failure exceeded 60% [12]. This improvement is probably explained by the structuring of care pathways, the harmonization of treatment regimens and the establishment of regular reassessment points.

In terms of prognosis, two clinical markers consistently emerge: grade 3 goiter (WHO) and exophthalmos, both associated with an increased probability of failure or recurrence. Their presence justifies early stratification upon inclusion, as well as the use of prognostic scores to objectify the risk (GREAT for recurrence, PREDIGO for the orbit) and prepare, if necessary, a definitive strategy (surgery or RAI) in high-risk profiles [14,16,18,19]. At the same time, the attack dose > 40 mg/day appears to be a composite marker of severity and is associated with less favorable outcomes, which is in line with international recommendations in favor of a minimum effective dose to limit iatrogenesis and bio-clinical instability, particularly in the context of pregnancy or comorbidities [13,16,18].

Operationally, the initiation of maintenance treatment between 3 and 6 months was accompanied by an increase in remissions and a decrease in recurrences, with no demonstrated benefit in extending the attack phase beyond six months when the switching criteria are met [10,11,16,18]. This kinetics supports the establishment of a standardized decision point at M6, based on clinical, biological and therapeutic assessment, in order to avoid inertia and to direct non-responders more quickly towards a definitive strategy. At the same time, delay in consultation of more than 12 months is associated with a less favorable prognosis, which argues for upstream actions (awareness, early referral) and for close monitoring of patients presenting late.

Finally, severe complications remain infrequent in the cohort, but they require targeted monitoring of vulnerable subgroups (persistent tachycardia, age > 50 years, high clinical activity). In case of documented non-response, surgery remained the main recourse, while iodine 131 was rarely used, a framework which remains in line with the recommendations urging against delaying the definitive strategy in patients not

responding to medical treatment [14,15–19]. Taken together, these elements offer a pragmatic decision-making framework; initial stratification, effective minimal titration, reassessment at M6 and rapid referral of non-responders; directly transposable to resource-constrained systems.

V. CONCLUSION

In this Senegalese cohort of 3007 patients followed for 25 years, the evolution under synthetic antithyroid drugs is divided into remission, recurrence and failure. Unfavorable outcomes are mainly related to grade 3 goiter, orbital involvement, delayed consultation (> 12 months) and a starting dose > 40 mg/day. Conversely, early initiation of maintenance treatment (≤ 6 months) increases remissions and justifies a decision point at M6. These results, despite the limitations of a single-center retrospective study, point towards initial stratification, effective minimal titration and rapid referral to surgery/RAI in case of non-response, pending prospective multicenter studies.

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