

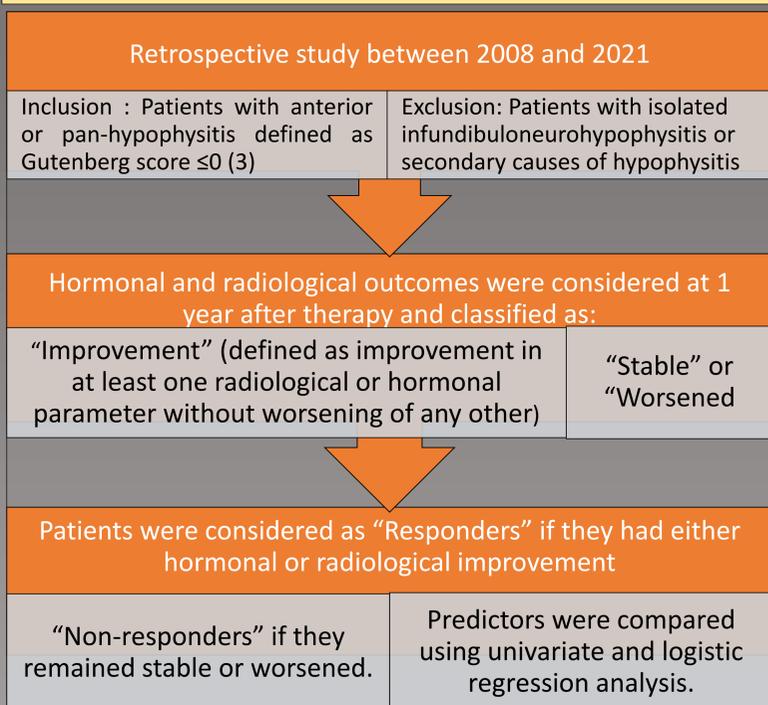
Predictors of response to steroid therapy in primary anterior or pan-hypophysitis

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- Indication of steroids in primary autoimmune hypophysitis is not well defined (1).
- Recent literature suggests that, in primary hypophysitis, steroids are preferred only for mass symptoms or visual deficits (2).
- We aimed to find predictors of response at 1 year after steroid therapy.



N= 23 (17 Females with Mean Age 38 yrs)

Group A (Steroid Treated) : N =16
10 patients received IV methylprednisolone (1gm/day for 3 days) followed by oral prednisolone (1mg/kg for 6 weeks and tapered) and 6 patients received oral steroids only.

Group B (Observed Only): N=7

- 13/16 patients improved in Group A and (2/7) patients in Group B (P=0.014). (Fig 1)
- In Group A, 62.5% (10/16) and 75% (12/16) patients showed hormonal and radiological improvement, respectively; whereas 37.5% (6/16) and 25% (4/16) remained hormonally and radiologically stable, respectively.
- No patient worsened.

On both univariate and logistic regression analysis, **Predictors of hormonal improvement were**

1. Symptom onset ≤ 6 months (83.3% vs 0%, P=0.0029)
2. Pituitary volume $\leq 2\text{cm}^3$ (70% vs 16.6%, P=0.0389)
3. Absence of stalk thickening (50% vs 0%, P=0.0367)

Predictors of radiological improvement were

1. Symptom onset ≤ 6 months (91% vs. 25%, P=0.0077)
2. Presence of central hypocortisolism (83.3% vs 25%, P=0.0293)

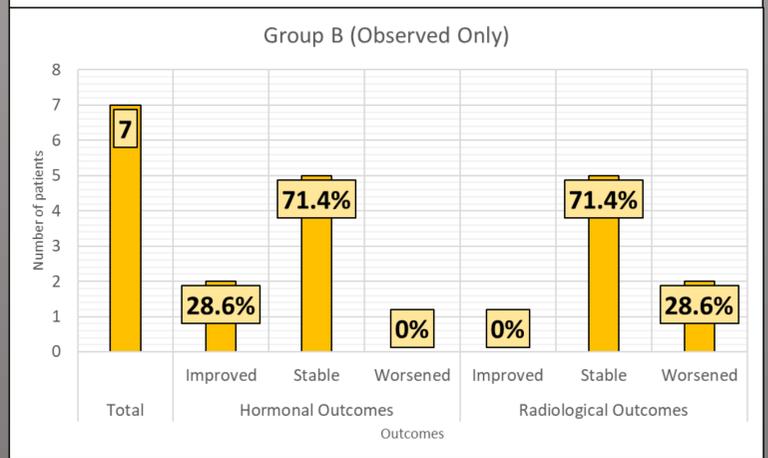
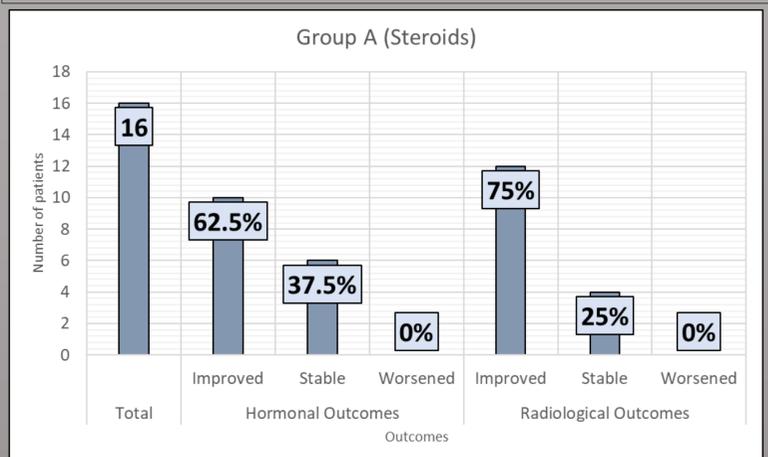


Fig 1. Outcomes of patients in our study

Factors	Hormonal Outcome			Radiological Outcome		
	Responders	Non-Responders	P	Responders	Non-Responders	P
Symptoms						
Symptom onset (months)						
≤ 6	10 (83%)	2 (17%)	0.0029#	11 (92)	1 (8%)	0.0077#
>6	0 (0%)	4 (100%)		1 (25%)	3 (75%)	
Gender						
Male	2 (20%)	2 (33%)	0.551	3 (25%)	1 (25%)	1
Female	8 (80%)	4 (67%)		9 (75%)	3 (75%)	
Headache						
Yes	8 (80%)	4 (67%)	0.551	9 (75%)	3 (75%)	1
No	2 (20%)	2 (33%)		3 (25%)	1 (25%)	
Visual Field Deficit						
Yes	3 (30%)	2 (33%)	0.8892	4 (33%)	1 (25%)	0.7555
No	7 (70%)	4 (67%)		8 (67%)	3 (75%)	
Hormonal parameters						
Hypogonadism						
Yes	4 (40%)	2 (33%)	0.7897	4 (33%)	2 (50%)	0.551
No	6 (60%)	4 (67%)		8 (67%)	2 (50%)	
Hypothyroidism						
Yes	6 (60%)	3 (50%)	0.6963	7 (58%)	2 (50%)	0.7711
No	4 (40%)	3 (50%)		5 (42%)	2 (50%)	
Hypocortisolism						
Yes	7 (70%)	4 (67%)	0.8892	10 (83%)	1 (25%)	0.0293#
No	3 (30%)	2 (33%)		2 (17%)	3 (75%)	
Radiological Parameters						
Pituitary Height						
$\leq 1\text{cm}$	4 (40%)	4 (67%)	0.3017	6 (50%)	2 (50%)	1
$>1\text{cm}$	6 (60%)	2 (33%)		6 (50%)	2 (50%)	
Pituitary Volume						
$\leq 2\text{cm}^3$	7 (70%)	1 (17%)	0.0389#	6 (50%)	2 (50%)	1
$>2\text{cm}^3$	3 (30%)	5 (83%)		6 (50%)	2 (50%)	
Stalk thickened						
Yes	5 (50%)	0 (0%)	0.0367#	3 (25%)	0 (0%)	0.2673
No	5 (50%)	6 (100%)		9 (75%)	4 (100%)	
Extra/Parasellar extension						
Yes	3 (30%)	4 (67%)	0.1523	5 (42%)	2 (50%)	0.7711
No	7 (70%)	2 (33%)		7 (58%)	2 (50%)	
Hypophysitis type						
Pan-	3 (30%)	2 (33%)	0.8892	3 (25%)	2 (50%)	0.3502
Anterior	7 (70%)	4 (67%)		9 (75%)	2 (50%)	
Route of steroid administration						
IV	6 (75%)	4 (67%)	0.7327	8 (67%)	2 (50%)	0.551
Oral	2 (25%)	2 (33%)		4 (33%)	2 (50%)	

Table 1. Predictors of outcome in patients receiving steroid therapy. # P<0.05 significant

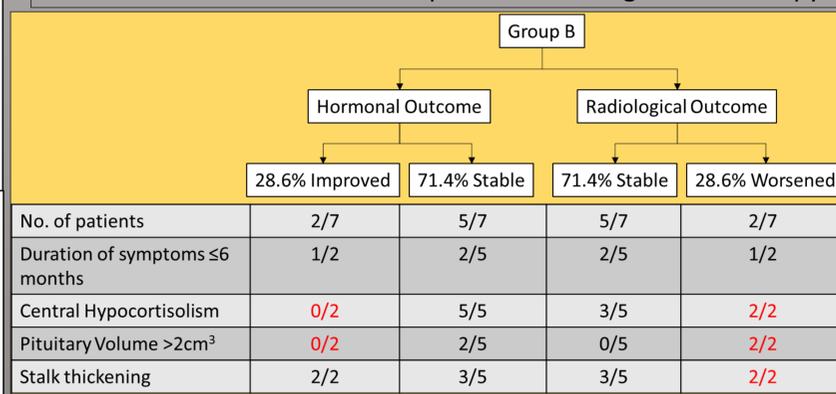


Fig 2. Subgroup Analysis of Group B with predictors of response from Group A.

- Both patients who improved hormonally had preserved cortisol axis and pituitary volume $<2\text{cm}^3$.
- Both patients with radiological worsening had central hypocortisolism, pituitary volume $>2\text{cm}^3$ and stalk thickening.

Discussion: This study presents **four predictors** of improvement for patients receiving steroid therapy.

- Symptom onset ≤ 6 months would correspond to ongoing inflammation before fibrosis sets in.
- The presence of central hypocortisolism may be a worse outcome predictor, affirming the theory that cortisol may itself reduce inflammation in the pituitary (4).
- Stalk thickness and the pituitary volume reflect degree of inflammation in the pituitary. These findings are in agreement with a study by Chiloiro *et al.* who demonstrated pituitary stalk thickening and volume as predictors of response with steroid therapy (1).
- There was no significant difference between oral and intravenous steroids in our study.

Conclusion: Steroids should be strongly considered for those with duration of symptoms ≤ 6 months, presence of central hypocortisolism, thickened pituitary stalk and a pituitary volume $>2\text{cm}^3$.

References:

1. Chiloiro S, Tartaglione T, Capoluongo ED, *et al.* Hypophysitis outcome and factors predicting responsiveness to glucocorticoid therapy: A prospective and double-arm study. J Clin Endocrinol Metab. 2018;103(10):3877–89.
2. Langlois F, Varlamov E V, Fleseriu M. Hypophysitis, the Growing Spectrum of a Rare Pituitary Disease. J Clin Endocrinol Metab. 2022;107(1):10–28. doi:10.1210/clinem/dgab672
3. Gutenberg A, Larsen J, Lupi I, *et al.* A radiologic score to distinguish autoimmune hypophysitis from nonsecreting pituitary adenoma preoperatively. Am J Neuroradiol. 2009 Oct;30(9):1766–72. d
4. Bellastella G, Maiorino MI, Bizzarro A, *et al.* Revisitation of autoimmune hypophysitis: knowledge and uncertainties on pathophysiological and clinical aspects. Pituitary. 2016 Dec 1;19(6):625–42.

The authors have no conflict of interest to declare.