



## A RARE CASE OF GRAVE'S DISEASE PRESENTING AS PANCYTOPENIA WITH CONGESTIVE CARDIAC FAILURE

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**ABSTRACT** Thyrotoxicosis can be manifest in a variety of clinical forms, among of which pancytopenia is rarest presentation, pancytopenia can be caused by disease as well as therapy so diagnosis become more difficult and critical. The fundamental process is still unknown, Ant thyroid drugs which are known to cause cytopenias as a side effect, can be used safely in treatment. With the development of euthyroid state, thyrotoxicosis induced pancytopenia can be completely reverted. Here we present a rare case of Grave's disease presenting as pancytopenia with congestive cardiac failure.

**KEYWORDS :** Grave's disease, Pancytopenia, Thyrotoxicosis

### INTRODUCTION

Pancytopenia is a serious hematological syndrome that in addition to primary marrow failure, can be caused by a number of other disorders like Infections, radiations, medications (particularly cytotoxic drugs) and some metabolic disorders.<sup>1</sup> Among the metabolic disorders association between hyperthyroidism and pancytopenia is rare entity.<sup>2</sup> The path physiology of such association is unknown, while immunogenic and toxic mechanisms have been proposed as possibilities.<sup>3</sup> Graves' disease is an autoimmune disorder in which antibodies are created against the thyroid gland thyrotrophic receptors. The activation of these receptors by thyrotrophic receptor antibodies results in hyperthyroidism, which is clinically manifested as increased appetite, weight loss, palpitations, tremors, heat intolerance and sleeplessness.<sup>1</sup> Pancytopenia is an uncommon with thyrotoxicosis it can be a side effect of anti-thyroid medicine, the precise mechanisms are not well known but hypothesis considered which include shortened red cell life span due to reticuloendothelial system functional hyperactivity, inefficient erythropoiesis induced by excess thyroid hormones, autoimmune processes, and thyroid hormone toxicity to bone marrow stem cells.<sup>5,6</sup>

### CASE STUDY

A 22 year-old previously healthy thin built male presented with complains of bilateral pedal edema, neck swelling and breathlessness on walking which was relieved on rest, patient also complained of episodic palpitations and sweating with significant weight loss in last six month even he had increased appetite and normal bowel habits without any history of fever, chronic cough, orthopnoea, paroxysmal nocturnal dyspnoea (PND) and patient was not on any medications. On general examination patient had a fine tremors, sweating over palms, pallor with bilateral pitting pedal edema, increased jugular venous pressure, tachycardia but blood pressure was within normal limit without any bony tenderness that suggestive of any bone deformity but his ECG was suggestive of left ventricular hypertrophy picture due to that patient 2D echo was done it was within normal limit and patient sputum was not suggestive of any tubercular or other bacterial growth. On routine blood investigation patient complete blood count was suggestive of pancytopenia but this patient had normal reticulocyte count, iron studies, vitamin B12, lactate dehydrogenase from signs and symptoms patient was suspected for thyroid disorder so patient thyroid profile was done it was suggestive of hyperthyroidism along with neck swelling in view of deranged thyroid profile patient anti TPO was sent it was in higher side so patient was diagnosed with Graves disease and patient was started with anti thyroid drugs that is methimazole and patient was discharged on medications on follow up patient blood parameter were improving which was deranged previously, so finally we confirm our diagnosis after starting our treatment and patient where living happily.

### DISCUSSION

Our patient presented significant weight loss despite a normal appetite, excessive perspiration his routine investigations suggestive of thyrotoxicosis and pancytopenia.

The history and examination revealed no significant factors that may have contributed to the pancytopenia, such as recent febrile illnesses, haematological malignancies, autoimmune hemolysis, or medication usage. Thus, the idea of thyrotoxicosis causing pancytopenia was examined.

Patient was placed on Carbimazole, which made him euthyroid and improved his pancytopenia, supporting our diagnosis. We started with Methimazole as Iguchi et al<sup>9</sup> and Soeki et al<sup>10</sup> reported a case reported a case of pancytopenia due to Graves' disease with recovery on Methimazole therapy.

Graves disease could be associated with various single cell lineage abnormalities like anemia(22%), thrombocytopenia(4.3%) and leucopenia(15-30%) but pancytopenia is a very rare complication of grave's disease only 7 cases noted in literature.<sup>8,11-14</sup>

There are different theories for hematological abnormalities observed in graves' disease like leucopenia occurs due cross reactivity between thyroid stimulating hormone (TSH) receptors and neutrophils, decreased marrow reserve and circulating time of granulocytes.<sup>15,16</sup> and thrombocytopenia occurs due to immunological abnormality or reduced lifespan of platelets secondary to hypersplenism with or without splenomegaly.<sup>17</sup>

### CONCLUSION

Pancytopenia is a rare complication of hyperthyroidism, even though the mechanism is still unknown, recovery from hyperthyroidism is associated with a simultaneous reversal of pancytopenia there for it is advisable that evaluation of the patient's thyroid functions as part of the pancytopenia even though hyperthyroidism may not be clinically evident at the first instance. Conversely, hematological abnormalities in patients with hyperthyroidism should be carefully analyzed in view of the reported association between the two conditions. Specific treatment for pancytopenia in such cases should be avoided until the effect of antithyroid treatment is observable.

### Investigations

**Table number 1**

Parameters	Patients Values	Normal Ranges
Hemoglobin	9.7	12-16.5g/dl
TLC	3190	3540-9060/cmm
Platelets count	57000	1.5-4.5lac/cmm
PCV	32	35-45

MCV	90	85-100
Serum B12	468	120-914pg/ml
ANTI TPO	>1050	
TSH	<0.015	0.4-4.68Miu/ml
Free T3	17.66	2.77-5.27pg/ml
Free T4	>6.66	0.8-1.9ng/dl
Serum Urea	16	7-20mg/dl
Creatinine	0.5	0.5-1.5mg/dl
Total bilirubin	1.5	0.3-1.3mg/dl
Direct Bilirubin	0.3	0.1-0.4mg/dl
Indirect bilirubin	1.2	0.2-0.9mg/dl
SGOT	107	12-39U/L
SGPT	97	7-41U/L
ALP	190	33-96U/L
Albumin	2.1	3.5-5.5g/dl
Total protein	6.3	6.7-8.7mg/dl
PRO BNP	1460	
CKMB	116	
2D echo	Within normal limit	
ECG	Suggestive of Left ventricular hypertrophy	

## REFERENCES

1. Neal S young. Differential diagnosis of pancytopenia (table 94-1). Harrison's principles of internal Med 16th ed. 2005; chapter 94:617.
2. B Shaw, A B Mehta. Pancytopenia responding to treatment of hyperthyroidism: a clinical case& review of literature. *Clinical & Laboratory Haematology*.2002; 246:385-387.
3. Duquenne M, Lakomsky D, Humbert Jc, Hadjadi S, Weryha G, Leclere J. pancytopenie resolutive par le traitement d'une hyperthyroïdie. *La presse Medicale* 1995; 24(17): 807-810.
4. Melmed s, polonsky K, Larsen p, et al. Williams textbook of endocrinology. 12th ed. philadelphia: elsevier, 2011:362-368.
5. Soeki T, Tamura Y, KONDO N, Shinohara H, Tanaka H, Bando K, Fukuda N. A case of thyrotoxicosis with pancytopenia. *Endocrine journal*. 2001;48(3):385-9.
6. Chen YH, Lin HJ, Chen KT. Rare presentations of hyperthyroidism—Basedow's paraplegia and pancytopenia. *The American journal of emergency medicine*. 2009;27(2):258-e1.
7. Weitzman SA, Stosel TP, Harmon DC, Daniels G, Maloof F, Ridgway EC. Antineutrophil autoantibodies in Graves' disease. Implications of thyrotropin binding to neutrophils. *The Journal of clinical investigation*. 1985;75(1):119-23.
8. Braverman Le, Utiger rD. Werner and ingbar's The thyroid; a fundamental and clinical text. 7th ed. philadelphia: pa: Lippincott-raven: 637-42.
9. Iguchi H, nakano M. case of hyperthyroidism with pancytopenia nippon naibunpi Gakkai Zasshi. 1983 Aug 20; 59(8):1117-1122.
10. Soeki t, tamura y, Kondo n, Shinohara H, tanaka H, Bando K, Fukuda n. A case of thyrotoxicosis with pancytopenia. *endocr J*. 2001 Jun; 48(3):385-389.
11. Perlman JA, Sternthal PM. Effect of 131I on the anemia of hyperthyroidism. *Journal of Chronic Diseases*. 1983;36(5):405-12.
12. Gianoukakis AG, Leigh MJ, Richards P, Christenson PD, Hakimian A, Fu P, Niihara Y, Smith TJ. Characterization of the anaemia associated with Graves' disease. *Clinical endocrinology*. 2009;70(5):781-7.
13. Burns RW, Burns TW. Pancytopenia due to vitamin B12 deficiency associated with Graves' disease. *Missouri medicine*. 1996;93(7):368-72.
14. Paydas S, Karademir M, Koçak M, Burgut R, Gürçay A. Peripheral blood findings in thyrotoxicosis. *Medical Journal of Islamic WorldAcademy of Sciences*. 1991;4(4):323-5.
15. Lima CS, Wittmann DE, Castro V, Tambascia MA, Lorand-Metze I, Saad ST, Costa FF. Pancytopenia in untreated patients with Graves' disease. *Thyroid*. 2006;16(4):403-9.
16. Shin JH, Kim HJ, Kim SB, Kim DP, Ko BS, Kim DS, Kim JM, Gong SJ, Lee J. A case of Graves' disease with pancytopenia. *Journal of Korean Endocrine Society*. 2009;24(4):272-6.
17. Adrouny A, Sandler RM, Carmel R. Variable presentation of thrombocytopenia in Graves' disease. *Arch Intern Med*. 1982;142(8):1460-4.