

## Atypical presentation of Hypothyroidism in a Fighter Pilot: A Case Report

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IJASM 2008; 52 (1) : 30-33

**Key Words:** hypothyroidism, somatoform autonomic dysfunction

**H**ypothyroidism is a clinical disease that is characterized by insufficient production of thyroid hormone. It is a common condition affecting 1% of the general population [1]. It is more common in females with 5-10 fold lower prevalence in males. Classic signs and symptoms of hypothyroidism range from fatigue, weight gain, memory disturbance, cold intolerance, puffiness, decreased sweating, and coarse skin [2]. Hypothyroidism commonly occurs in elderly people. Approximately 25% to 40% of these individuals will have an atypical presentation that prevents the disorder from being diagnosed or properly treated [3].

In Indian armed forces, aircrew when confronted with any health related issues report to the Station Medicare Centre (SMC). After a thorough evaluation, diagnosis is confirmed and treatment started. However, symptomatology of diseases does not follow a similar pattern in all cases. Atypical presentation of several diseases has been put forward in the literature. In such cases, diagnosis and treatment of the condition might get delayed, often affecting the morale of the individual and the loss of highly efficient human resource of the Indian armed forces. Hypothyroidism is a disorder which has a tendency to present subclinically or atypically. Here we report a case of atypical presentation of hypothyroidism in a fighter pilot.

### Case Summary

A 37 year old military aircrew (fighter pilot) with about 2700 hours of flying experience came to medical attention in Mar 2007 when he reported to his SMC with complaints of excessive belching for 3 years and occasional pain in the neck and shoulders since Jan 2007. History revealed that he developed symptoms of excessive belching, headache, narrowing of vision, uneasiness, pain in the neck and shoulders, tingling sensation in the hands, inability to focus on his task and feeling of drained out - all happening during a straight and level flight. Similar episodes occurred in subsequent 2 more sorties even during non stressful phases of flight. In one such sortie, he started hyperventilating and switched on to 100% oxygen just after take-off. There was no history of weight gain, cold intolerance, sluggishness, mood changes, altered bowel habits. He was married and did not report any domestic or work related stress. An occasional drinker, he had stopped smoking for last 2-3 years. During evaluation, his electrocardiogram revealed T wave inversion in lead III. At the SMC, a diagnosis of ECG abnormality was made. He underwent detailed cardiovascular at the nearest service

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Date of Submission : 22 Dec 2007

Accepted for publication : 21 May 2008

hospital as an in-patient; investigations which did not reveal any abnormality. He was evaluated by Gastroenterologist and Cardiologist and discharged with the diagnosis of CVS-INV-NAD as the officer also became asymptomatic. After discharge from hospital, he reported back to the SMC with no relief of symptoms and did not feel comfortable and confident to fly. Consequently he was suggested to undergo detailed evaluation including motivation to fly. Low G tolerance was not considered as it all happened during low G profile. The officer was placed in low medical category and recommended evaluation at Institute of Aerospace Medicine (IAM) after 04 weeks.

During his evaluation at IAM, it was opined that symptoms might be related to stress which needs to be evaluated into. Initial neuro-psychiatric evaluation revealed somatoform autonomic dysfunction (ICDIO:F45.3) and he was treated with Cap Doxepin (Phormec)25mg HS and Tab Clonazepam (Phormec) 0.5mg HS. However, a differential diagnosis of adjustment disorder (ICIDO: F43.2), mixed anxiety and depressive disorder (ICIDO: F41.2), thyroid dysfunction was made and was advised further investigations. Investigations revealed raised TSH (>100 p.U/L) along with low T3 and T4 on two occasions. He also had raised uptake of radioactive iodine. Other surrogate markers like macrocytosis and dyslipidemia were present. Ultra sonography scan (USS) thyroid was normal. Fine needle aspiration cytology (FNAC) thyroid could not be done as the swelling was not palpable. Anti-TPO antibodies were negative. At this stage, after 3 weeks of hospitalization, all his medications were stopped and he was diagnosed as a case of hypothyroidism. He was started on replacement therapy (Tab Eltroxin 150 p.gm/ day) and sent on sick leave for 8 weeks.

On expiry of sick leave, he was reviewed back at IAM. Dosage of Eltroxin was increased to 200p.gm/day and he was advised to repeat thyroid

profile after 4-6 weeks. He had remained asymptomatic and felt fresh with Eltroxin. He continued to be in low flying category for 24 weeks and advised review with the medical report from senior medical officer on treatment/side effects and an executive report from commanding officer on his progress of health and symptoms. He was also found to have left sided sensori-neural hearing loss for which he was placed in restricted permanent category and advised to use hearing conservation aids. He continues in non flying medical category for observation and and follow up.

### Discussion

Hypothyroidism may be due to a central disorder in which the thyroid does not produce normal levels of T4, a pituitary disorder in which insufficient thyroid-stimulating hormone (TSH) is produced, or a decrease in thyrotropin-releasing hormone (TRH) from the hypothalamus [3].

Certain risk factors are associated with the development of hypothyroidism [5]. They are enumerated in the table 1.

**Table 1- Risk factors of hypothyroidism**

Family history of thyroid disease	Hypercholesterolemia
Hyperthyroidism (Grave's disease)	Insulin dependant diabetes
Thyroid surgery	Vitiligo
Head & neck radiation exposure	Primary biliary cirrhosis
Patients > 60 years of age	Primary systemic sclerosis
Perinicious anemia	Ablation of thyroid with I 131

The most common cause of hypothyroidism in adult and elderly individuals is Hashimoto's thyroiditis [3]. Hashimoto's disease is a chronic lymphocytic thyroiditis with an autoimmune component that ends in primary thyroid failure.

The classic signs and symptoms of hypothyroidism in adult patients include lethargy, fatigue, and dry skin, which are commonly associated with aging. It is not uncommon for older adults with hypothyroidism to have vague, nonspecific symptoms or atypical symptoms that mimic other diseases.

The ability of Hypothyroidism to mimic a number of medical conditions originates in the vast functions of the thyroid hormones, which are reduced or absent in hypothyroidism. The functions of thyroid hormones include modulation of carbohydrate, protein and fat metabolism, vitamin utilization, mitochondrial function, digestive process, muscle and nerve activity, blood flow, oxygen utilization, hormone secretion and sexual and reproductive health. Thus, when the thyroid hormone content gets out of balance, systems covering the whole body are affected. This is why hypothyroidism can look like other diseases. Conversely, sometimes other conditions can be mistaken for hypothyroidism [6]

Some of the signs and symptoms which have been explained as atypical presentation in patients with hypothyroidism [7] are enumerated in table 2.

**Table 2 - Atypical presentation of hypothyroidism**

Confusion	Behavioral changes
Macrocytic anemia	Peripheral neuropathy
Dementia-like behavior	Memory impairment
Myopathy	Depressed affect
Muscle weakness	Hypercholesterolemia

### **Aeromedical significance**

The depressed affect along with behavioral changes brought about by hypothyroidism can mislead one to consider that the individual's motivation to fly may have been reduced as was doubted in this case.

In somatoform autonomic dysfunction, patient presents with symptoms as if they were due to a physical disorder of an organ system that is predominantly under autonomic control, e.g. heart (palpitations), upper gastrointestinal tract (aerophagy, hiccough), lower gastrointestinal tract (flatulence, irritable bowel), respiratory system (hyperventilation), genitourinary system (dysuria), and other organ systems. There is preoccupation and likely distress with the possibility of a serious disorder of the particular organ system. The preoccupation persists despite repeated assurances and explanation. Physical examination and investigations do not show presence of any significant abnormality [8]. However, in this case, investigations revealed hypothyroidism and initiation of replacement therapy relieved the symptoms of the aircrew. And hence the diagnosis of somatoform autonomic dysfunction was dropped. Aeromedical disposition was given based on the standards laid down for thyroid dysfunction.

At present this aircrew is in a temporary non-flying medical category. According to existing guidelines [4], cases of hypothyroidism are initially be placed in temporary non-flying medical category for 12 - 24 weeks. Aircrew with mild hypothyroidism corrected by thyroxine or equivalent drugs may be permitted restricted flying if they become euthyroid and there are no side effects of medication. Thereafter they can be considered for being upgraded to be fit for Transport/ Helicopters only. Guidelines laid down for civil aviation duties by ICAO [1] state that florid hypothyroidism is clearly incompatible with aviation duties. Aircrew may be considered for medical assessment in any class provided they remain euthyroid. Such aircrew should be under regular supervision by an endocrinologist [1]. Given these guidelines, it is unlikely that this aircrew will go back to fighter flying.

## Conclusion

This case report is intended to create awareness about atypical presentation of hypothyroidism. Anti-thyroid antibodies being negative in this case rules out Hashimoto's thyroiditis. The diagnosis of hypothyroidism is to be kept in mind in case of symptomatology that may mimic psychiatric illness or raise suspicion of low motivation to fly.

**Conflicts of interest:** None identified.

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