

## **Approach to a case of Vitiligo**

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An 18 years old pilot aspirant reported for the class-I medical examination. Scrutiny of his class-II medical documents revealed that he was noted to have anemia and vitiligo and was evaluated for the same. The Hemoglobin electrophoresis and skin biopsy done during the class II medical examination pointed towards the diagnosis of thalassemia trait and vitiligo respectively. The individual denied intake of any medication and the family history was not contributory. The general and physical examination were unremarkable except for the presence of extensive cutaneous hypopigmented macular lesions involving the chest, limbs and trunk. The issues involved in the class-I medical evaluation is the immediate medical fitness and also the implications of vitiligo on the future carrier.

### **What is vitiligo?**

Vitiligo is a common, specific, often heritable, acquired disorder characterized by well circumscribed milky white cutaneous macules devoid of identifiable melanocytes with a world wide prevalence of 1-2%. It appears to be observed more commonly on the sun exposed areas and over the sites subjected to repeated trauma. They lack other epidermal changes. All races and both sexes are equally affected. The lesions may manifest from the birth to late in life but majority occurs by the age of 20years. A positive family history can be elicited in about one third of all the cases. Although vitiligo is generally recognized as a single entity, the etiology is complex. Different hypothesis proposed to explain the etiology are Autoimmune, Neurogenic and Self destruction theory of Lemer. Individuals

with vitiligo can often attribute the onset of their disease to specific life event, crisis or illness. Many can relate it to loss of job, death of close family member, an accident or a severe systemic disease.

### **How is vitiligo classified clinically and what is its natural history?**

The symptoms of vitiligo are the appearance of white (depigmented) patches. Vitiligo is further classified based on the number and distribution of the lesions.

### **Types of vitiligo**

- a) Localized
  - i) Focal: One or more macule in one area but not clearly in a segmental or zosteriform distribution.
  - ii) Segmental: One or more macule in a quasi-dermatomal pattern.
  - iii) Mucosal: Involvement of mucus membrane alone.
- b) Generalized
  - i) Acrofacial: Involvement of distal extremity and face.
  - ii) Vulgaris: Scattered macule.
  - iii) Mixed: Acrofacial and vulgaris involvement, or segmental and acrofacial and or vulgaris involvement.

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The natural history of vitiligo is variable and unpredictable both in onset as well as in progression/evolution. The period of evolution for the focal and segmental vitiligo is often less than a year, after which there is little or no extension; spontaneous re-pigmentation is however unusual. At times the focal vitiligo may be a precursor for generalized vitiligo. The common course for most vitiligo however is a gradual evolution and periodic development of new macules.

### **What are the aeromedical concerns with vitiligo?**

The chief aeromedical concerns while dealing with a case of vitiligo are:-

- a) Association with other systemic diseases
- b) Issues related with the management/treatment of the disease
- c) Psychological impact of the disfigurement.
- d) Cumulative aviation stress response in aircrew is not known.

### **What are other systemic autoimmune diseases associated with vitiligo?**

Vitiligo is considered an autoimmune disorder and is often found in association with other autoimmune systemic disorders. Many authors have reported an association of vitiligo with thyroid disease-both hyper and hypothyroidism (30%), polyglandular or multiple endocrinopathy (21%), pernicious anemia (1.6-10.6%), Addison's disease (2%), Diabetes mellitus (1-7.1%), hypoparathyroidism (1%) & myasthenia gravis. Additional abnormalities reported in association with vitiligo includes, cutaneous abnormalities like leukotrichia, premature grey hair, halo naevi and alopecia areata; ocular abnormalities like iritis, retinal pigmentary and choroidal abnormalities.

### **What psychological issues are anticipated in an individual with vitiligo?**

While vitiligo in itself may not harm the individual medically, it is the emotional and psychological effects which can be devastating. The chronic nature of the disease, long term treatment, lack of uniform effective therapy and unpredictable course of the disease is usually very demoralizing for the individual suffering from vitiligo. The cosmetic disfigurement brings about anxiety and preoccupation with the concealment of the lesions. It is thus becomes vital to address the psychological component of the disease. The most common psychiatric illness encountered in people with vitiligo in general population is depression and anxiety and the same will be valid for the aircrew.

### **What is the current aeromedical disposal of a case of vitiligo? What are the concerns with the present guidelines?**

There are no specific guidelines available for candidates/aircrew with vitiligo as far as class I medical evaluation and the renewal medical examinations are concern. The guidelines available are rather broad and generic. The various guidelines issued on vitiligo are as follows:-

- a) IAP 4303 para3.8.3 (k): Candidates suffering from minor degree of Leukoderma affecting the uncovered parts may be accepted. But those having extensive degree of skin involvement and especially, when the exposed parts are affected, even to a minor degree, should not be accepted.
- b) JAR FCL 3.245 (a): An applicant for, or holder of a class I medical certificate shall have no established dermatological condition, likely to interfere with safe exercise of the privilege of the applicable license. Referral to the AMS shall be made if doubt exists about any condition.

- c) ICAO 6.2.2 (A): Any applicant of any class shall be required to be free from any abnormality; congenital or acquired such as would entail a degree of functional incapacity which would likely to interfere with the safe operation of an aircraft or with safe performance of duty.
- d) FAA Manual of Civil Aviation, Chapter 16 (22a): Vitiligo is the most common disorder of pigmentation. It presents with symmetrical patches of complete depigmentation e.g. eyelids, back of hands, genitalia, knees etc. whilst this disorder may be socially and cosmetically distressing, it rarely has any systemic cause.

The concerns with the present guidelines are the ambiguity and the generalized expression regarding fitness or unfitness.

- a) An individual with a localized vitiligo who may be considered fit, will in all probability over the year's progress and develop fresh lesions qualifying him for unfitness.
- b) With our present understanding of the disease, it is not possible to predict the natural history of vitiligo and thus it is not humanly possible to certify that the condition is fully diagnosed, fully understood and under control.
- c) No mention is made regarding the associated systemic autoimmune disorders which has more implications for the flight safety than vitiligo itself.
- d) Psychological aspect of the condition and its possible effect on the aircrew and flight safety has not been addressed.

**In view of the limitations with the present guide lines how do we approach this case of vitiligo?**

The algorithm suggested and being followed at the Institute of Aerospace Medicine is depicted in the Figure 1. Emphasis is placed on the history and clinical examination for the diagnosis of associated systemic disorders. Auto antibodies are known to precede the development of autoimmune diseases by many years and may increase the likelihood for prediction of subsequent development of the disease. Doing complete autoantibody screen is cumbersome and often impractical and hence only thyroid profile and blood sugars are done routinely. The individual is informed the risk of subsequent development of associated disorder and its implication on the flying career.

At times the candidates for class I medical examinations are very apprehensive about the risk especially so due to the high cost of training, loss of precious learning years, and uncertainty. This is especially so in view of the risk of development of other systemic disorders as subsequent grounding. In such cases a complete autoantibody screen is ordered. Notwithstanding the results, the candidates are explained that the risk remains despite the autoantibody screen being negative.

The aim of the exercise is to follow the existing guidelines with out undermining the current understanding about the disease.

#### **How do we follow up these cases of vitiligo?**

The individuals with vitiligo are followed up on yearly basis and evaluated clinically for the dermatological and the extra dermatological systemic involvement. Individual are assessed for the appearance of new lesions as well as development of associated systemic disorders. Though no guidelines exist it is prudent to repeat the blood sugars and the thyroid profile every three years.

Figure1: Algorithm for evaluation and disposal of cases of vitiligo

