FLIGHT PERSONNEL HAVE 2-3 TIMES INCREASED RISK OF SKIN CANCER

Mr Per Hall, Consultant Plastic Surgeon and Clinical Director for Skin at HealthScreen UK reviews the research and how to manage the risks.

Types of skin cancer

There are broadly 3 types of skin cancer. The most concerning type is malignant melanoma which has the potential to spread and affect survival. Early detection can be lifesaving. The other 2 skin cancers are referred to as non-melanoma skin cancers (NMSC) – these are basal cell carcinomas and squamous cell carcinomas. Basal cell carcinomas tend to grow slowly where they start and do not spread. They are common on sun exposed parts. Squamous carcinomas also have an ultraviolet induced potential, begin locally but do have a small chance of spreading either locally or through the lymphatic system. All 3 types of skin cancer have been shown to be increased in those exposed to more sun exposure and ionizing radiation.

Malignant melanoma is also more common in those prone to burning in the sun:
• those with skin type 1 (who always burn and never tan in the sun) have a 3 times risk compared with the general population
• those with freckling have a 3 times increased risk
• those with a large number of moles have a 10 times increased risk for more than 100 moles
• when there has been a personal or family history already there is 10 times increased risk.

The incidence of malignant melanoma is doubling every 10 years despite efforts to reduce this risk with intensive public education campaigns.

Occupational risk

Many studies have looked at the possibility that certain occupations might be more prone to development of malignant melanoma and NMSC. Malignant melanoma is more common in the higher social classes and the better educated and the distribution of melanomas by occupational groups has been interpreted as resulting from differences in exposure to sun, notably the number of episodes of intermittent exposure between these occupational groups (1). Combination of Cancer Registry data from England, Wales and Sweden on almost 9,000 cases of malignant melanoma found professional workers of both sexes to experience an excess incidence compared with the general population. Doctors had a 1.9 times increased risk and airline pilots 2.75 times increased risk (2).

Female flight personnel & melanoma risk

Concern over pilots’ and airline crews’ exposure to larger than normal amounts of ionising cosmic radiation has prompted scientific research into this area.

Two studies were published in 2006 looking into all the research and drawing it all together (called a meta analysis). Both studies found a 2-3 times increase in the risk of melanoma in female flight personnel (3,4) without identification of any specific risk factor(s). Possible explanations include radiation exposure during flights as well as lifestyle factors such as sun exposure during leisure time between flights.

Male flight personnel & skin cancer risk

Research has also looked at the risk of cancer for male flight personnel. Researchers from Scandinavian countries evaluated data from 10,000 male airline pilots over 17 years to see if there is a link between cancer and exposure to cosmic radiation (5).

Skin cancer was 3 times more likely to occur in these pilots than the general population. Cancer was more likely in pilots with longer careers but as with female personnel, specific risk factors have not been identified but may include radiation exposure and lifestyle factors.

Skin cancer awareness and screening

Screening means testing people for the early stages of a disease before they have any symptoms. If you spend time out in the sun you should always take precautions to protect your skin from burning. It is unclear how risk factors for skin cancer add up – for instance skin that burns easily (3 times increased risk) and use of sun-tanning beds (3 times increased risk) can probably be added together. It makes sense to be cautious and aware of the dangers of skin cancers in anyone who has any additional risk factors and it would seem that both male and female aircrew are included in this group (6).

More information about radiation safety and airline staff

There are different types of radiation. The type of radiation that an airline pilot is exposed to is called cosmic radiation. This is a type of low energy, ionising radiation and includes cosmic rays from the solar system (sun, stars and outer space). The genetic material of body cells (DNA) is very sensitive to ionising radiation. Exposing our DNA to large amounts of any type of ionising radiation may, over time, lead to a cancer developing.

The Health Physics Society is an organisation of people specialising in radiation safety. They have a page of general information about radiation exposure and airline pilots (7). They say that airline workers have always been thought of as radiation workers. Despite this, airline pilots are only exposed to radiation levels well within acceptable dose limits for occupational exposures recommended by the International Commission on Radiological Protection. They say all airline pilots should insist that their employers provide them with the necessary information and education for them to fully understand this issue.
Summary

There is now considerable published evidence that male and female flight personnel have a 2-3 times increased risk of melanoma and non-melanoma skin cancer compared to the general population. Possible occupational exposures include ionizing radiation and recreational exposure to the sun during off duty hours. Regardless of the cause, education and awareness of the risks and how to minimise them would be good practice in this group and should be encouraged by their employers (8).

References:


Education and Management of risk in Skin Cancer

HealthScreen UK has a comprehensive SkinCheck program to help manage the potential for increased skin cancer risk in flight personnel.

1. Education
   Presentations to employees to help them understand the risk factors and signs/symptoms of skin cancer. This information can also be packaged in web format.

2. Individual assessment of skin cancer risk
   An individual employee’s risk can be calculated based on a simple questionnaire that is completed online. This risk is then discussed with the employee during a 30-minute consultation with a specialist skin cancer specialist nurse (see below).

3. SkinCheck
   SkinCheck offers an in-depth understanding of skin health, a skin examination and an understanding of how to check for changes that may lead to earlier detection.

   Images of moles or other skin lesions (either those suggested by our specialist nurse or any that the employee has concerns about) will be taken for further evaluation by an expert in skin cancer diagnosis who will send a report within 5 days via email on our secure web-based reporting system. These reports will either reassure or suggest that further evaluation or urgent referral may be necessary. Depending on employee choice, these referrals can either be to the NHS via the GP or via our practice manager, direct to a private skin cancer expert in either dermatology or plastic surgery (as appropriate) in the clinical network.

4. Screening for those at increased risk
   For flight personnel, HealthScreen UK recommends regular 3 monthly self examinations (as guided by our educational video) and an annual SkinCheck until employee confidence in self-examination and what to look for has been established. This screening program can be managed by HealthScreen UK with a personal reminder service.

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