Statement on the increased risk of cancer in people with ataxia-telangiectasia

People with ataxia-telangiectasia (A-T) have a significantly increased risk of developing cancer.

Figures published for the UK and Netherlands in 2011 suggest an incidence of around 22%, with most (65%) occurring in childhood[1]. Data from a French cohort published in 2015 suggest a similar incidence of around 25%[2].

It is important to remember that these incidence figures are generated from a cohort living greatly shortened lives with respect to the general population. The median life-expectancy of a person with classic A-T is about 25 years[3].

Background

Ataxia-telangiectasia is caused by mutations to the *ATM* (Ataxia Telangiectasia Mutated) gene, resulting in the loss or non-functioning of the ATM protein, which plays a key role in DNA-repair and maintaining genome stability. In this it is similar to many other gene mutations that are known to cause cancer, such as *BRCA1* and *2* or genes responsible for Fanconi anaemia.

Cancer in children with A-T

Children with A-T up to the age of 16 years predominantly develop lymphoid cancers, ~88% in both cohorts. The most common of these, is non-Hodgkin's lymphoma (56%), followed by acute lymphoblastic anaemia or ALL (25%) and Hodgkin's lymphoma (14%) in the UK and Netherlands cohort. Of the six solid tumours, three were brain tumours.

Cancer in adults with A-T

In adults over the age of 16 years a wider spectrum of tumour types is seen with solid organ tumours becoming more common Tumours may affect all organs and include endocrine tumours (pancreatic, thyroid, and pituitary), T-cell prolymphocytic leukaemia (T-PLL) and breast cancer. There is a 30-fold increased risk of breast cancer in women and annual screening with MRI after the age of 25 is recommended[4].

Recommendation

It is strongly recommended to clinicians treating people with A-T that in the event of unusual or otherwise unexplained symptoms, consideration be given at the earliest possible opportunity to the possibility of cancer being the cause, and appropriate tests carried out.

Although people with A-T are very sensitive to ionising radiation due to their underlying genetic defect, the use of tests involving ionising radiation is probably warranted where no other imaging modalities (eg ultrasound) would give satisfactory diagnostic results. However, radiotherapy and radiomimetic drugs should be avoided. Advice is available on some side effects seen in A-T children treated with some cytotoxics[5].

Further information

More information is available at www.atsociety.org.uk/for-professionals/cancer in A-T. The A-T Society (support@atosciety.org.uk or 01582 760733) can put you in touch with clinicians at the two UK A-T specialist centres, Nottingham University Hospitals (paediatric) or Papworth (adult). They can also provide contact details for clinicians with experience of treating particular cancers in A-T.

Authors

This statement is produced and endorsed by the partners in the UK National A-T Service:

- The A-T Specialist Centre at Nottingham University Hospitals
- The A-T Specialist Centre at Royal Papworth Hospital
- The Institute of Cancer & Genomic Sciences, University of Birmingham
- The Ataxia-Telangiectasia Society

References

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