

Epidemiology

Children with higher blood levels of antioxidants respond better to chemotherapy treatment for acute lymphoblastic leukaemia, suggesting that they should have a diet rich in organic fruit and vegetables.

Food factors uncovered in leukaemia

Dietary components are emerging as both risk factors and as protective agents for leukaemia. David Potterton examines the latest research

NATUROPATHS have always maintained that nutrition plays an important role in whether or not an individual develops cancer. Good nutrition, they argue, helps to protect an individual against cancer, while poor nutrition may speed its onset. Good nutrition may improve the prognosis of a person with cancer; poor nutrition may reduce their survival.

This view has been vigorously resisted over the years by oncologists who have generally held the position that diet has little to do with the causes of cancer and even less to do with its treatment. The only treatments on offer have been surgery, chemotherapy and radiotherapy.

It wasn't until Denis Burkitt developed the fibre hypothesis originally conceived by Surgeon Captain Peter Cleave that some researchers started to take an interest in nutrition. Peter Cleave was well ahead of his time in postulating that the degenerative diseases of Western civilisation, including obesity, were due to the over-consumption of sugar and the under-consumption of fibre.

Even today, oncologists seem to pay scant attention to the importance of nutrition in their patients, despite the upsurge of research findings implicating various dietary components in the development of degenerative disease. Nutrition is still not on the menu not even as an adjunct to the standard treatments.

The risk for getting acute myelogenous leukaemia was 90 per cent higher in overweight women aged 55 and older who had a body mass index (BMI) of 25-29. For women aged 55 and older with a BMI of 30 or greater, the risk increased to as much as a 140 per cent.

The only concession in recent times is that cancer appears to involve environmental factors. One must, therefore, give credit to researchers who are prepared to investigate the role of these environmental factors, some of which such as pesticides have a direct impact on the nutritional value of our food.

Obesity

Obesity – which can be categorised as nutritional disease – is a known risk factor for colon, breast, kidney and endometrial cancers. Now a new study from the University of Minnesota has linked obesity to leukaemia in older women.

The results, from the Iowa Women's Health Study, were published in the November issue of *Cancer Epidemiology, Biomarkers and Prevention* journal¹

Meanwhile, researchers from the University of California have found that if a woman eats more vegetables, fruit and protein before pregnancy it may lower the risk of having a child who develops leukaemia².

In 1986, more than 40,000 women aged between 55 and 69 years completed a lifestyle and health questionnaire that included current height and weight. Researchers followed up more than 37,000 of these women who, with the possible exception of skin cancer, were cancer-free at the start.

Over 14 years, 200 of the women developed leukaemia – 74 were diagnosed with acute myelogenous leukaemia (AML) and 88 with chronic lymphocytic leukaemia (CLL).

Dr Julie Ross PhD, of the University of Minnesota Medical School, who led the research, said: "The risk for getting AML was 90 per cent higher in overweight women aged 55 and older who had a body mass index (BMI) of 25-29.

"For women aged 55 and older with a BMI of 30 or greater, the risk increased to as much as a 140 per cent."

However, there was little evidence of an association between overweight and chronic lymphocytic leukaemia.

While the incidence of some forms of adult leukaemias, such as chronic lymphocytic leukaemia and chronic myeloid leukaemia, are declining, AML in people over the age of 65 has increased by about 10 per cent in the last 25 years.

It is not known exactly why higher BMI is associated with leukaemia, particularly AML, but a possible explanation could be an alteration in hormones linked with obesity.

"Like other cancers linked to obesity, reducing excess pounds and maintaining normal weight could be important in prevent-

ing AML,” said Dr Ross.

Aspirin

Aspirin is not a food, but there have been suggestions in the literature that it may protect against the development of various tumours. Julie Ross and her team of researchers also checked data from the Iowa Women’s Health Study to determine whether taking aspirin or other non-steroidal anti-inflammatory drugs such as ibuprofen could protect against leukaemia³. For this particular investigation, they followed up 28,224 women from the group. Dr Ross and her team found that women who developed leukaemia took aspirin significantly less often than women who did not develop leukaemia.

Pancreatic cancer

However, other researchers have come to different conclusions. For example, Dr Eva Schernhammer from Harvard Medical School and Brigham and Women’s Hospital, Boston, told a meeting of the American Association for Cancer Research that women who take aspirin may be at an increased risk of pancreatic cancer – a particularly deadly form of cancer⁴. In a follow-up study of more than 88,000 nurses it was found that those who took two or more aspirins a week for 20 years or more had an increased risk of 58 per cent, while women who took 14 tablets or more a week had an 86 per cent greater risk. A fuller report appeared in the *BNJ*, 2004, 21 [1] 19.

Childhood leukaemia

Researchers at the University of California, say that women who eat more vegetables, fruit and protein before pregnancy may lower their risk of having a child who develops leukaemia².

They compared 138 women who each had a child diagnosed with acute lymphoblastic leukaemia with a control group of 138 women whose children did not have cancer.

After comparing the women’s diets in the 12 months prior to pregnancy, researchers found that the higher the intake of vegetables, fruit and foods in the protein group, the lower the risk of having a child with leukaemia.

The researchers found that glutathione was the nutrient in the protein group with a strong link to lower cancer risk. Within the fruit and vegetable food groups, some foods – like carrots, string beans and cantaloupe — stood out as having stronger links to lower childhood leukaemia risk.

This research has been reported in a previous issue of the *BNJ*. For a fuller report see *BNJ*, 2004, [3] 21.

University of California researchers have also examined whether there is a link between a child’s early diet (up to the age of two years) and the risk of childhood leukaemia⁶. They checked which foods consumed by 328 children matched against controls might be associated with the risk of leukaemia.

The dietary information was obtained from a questionnaire administered to the child’s caregiver.

It was found that regular consumption of oranges, bananas and orange juice during the first two years of life was associated with a reduction in the risk of leukaemia being diagnosed between the ages of two and 14 years.

Restricting the analysis to leukaemia diagnosed between the ages of two and five years reflected a similar pattern of reduced



Julie Ross, associate professor of pediatrics and a member of The Cancer Center, at the University of Minnesota

risk. There was no association between eating hot dogs/lunch meats and risk of leukemia.

These results suggest that fruits or fruit juices that contain vitamin C and/or potassium may reduce the risk of childhood leukaemia, especially if they are consumed on a regular basis during the first two years of life.

Chemotherapy and antioxidants

Food factors also seem to be important in the success of treatment for children with leukaemia.

Those receiving chemotherapy for acute lymphoblastic leukaemia (ALL) seem to fare much better, the more they can maintain their levels of antioxidants.

Dr Kara M. Kelly and colleagues from the College of Physicians and Surgeons of Columbia University measured antioxidant levels, antioxidant capacity, and oxidative damage in 103 children newly diagnosed with ALL during the first six months of treatment⁵.

Antioxidant capacity decreased throughout the study, suggesting that the pool of flavonoids is reduced during chemotherapy. The children with higher concentrations of vitamin A, vitamin E and total carotenoids, tended to have fewer dose reductions, fewer infections, improved quality of life, less delay in chemotherapy treatment schedules, reduced toxicity, and fewer days spent in the hospital.

The investigators say their findings suggest that children with ALL may experience fewer treatment-related side effects if the amount of fruits and vegetables in their diet is increased.

If they were given organic produce their intake of antioxidants would be so much greater.

References

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