Estimated risk of breast cancer increases as red meat intake increases

June 10 2014

An uncooked rib roast. Credit: Michael C. Berch/Wikipedia

Higher red meat intake in early adulthood might be associated with an increased risk of breast cancer, and women who eat more legumes—such as peas, beans and lentils—poultry, nuts and fish might be at lower risk in later life, suggests a paper published *BMJ* today.

So far, studies have suggested no significant association between red meat intake and breast cancer. However, most have been based on diet during midlife and later, and many lines of evidence suggest that some exposures, potentially including dietary factors, may have greater effects on the development of breast cancer during early adulthood.

So a team of US researchers investigated the association between dietary

protein sources in early adulthood and risk of breast cancer.

They analysed data from 88,803 premenopausal women (aged 26 to 45) taking part in the Nurses' Health Study II who completed a questionnaire on diet in 1991.

Red meat items included unprocessed red meat (beef, pork, or lamb and hamburger) and processed red meat (such as hot dogs, bacon and sausage); poultry included chicken and turkey; fish included tuna, salmon, mackerel, sardines; legumes included beans, lentils and peas; and nuts.

Nine categories of intake frequency were recorded from "never or less than once per month" to "six or more per day."

Factors such as age, height, weight, race, family history of breast cancer, history of benign breast disease, smoking, menopausal status, hormone and oral contraceptive use were taken into account. Adolescent food intake was also measured and included foods that were commonly eaten from 1960 to 1980, when these women would have been in high school.

Medical records identified 2,830 cases of breast cancer during 20 years of follow-up.

Putting these real life data into a statistical model allowed the researchers to estimate breast cancer risks for women with different diets. They estimated that, for each step-by-step increase in the women's consumption of red meat, there was a step-by-step increase in the risk of getting breast cancer over the 20 year study period.

Specifically, the statistical model worked out the number of cases of breast cancer during the total years of follow up for all the women in the study (rate/person years).

For example, the model estimated that there would be 493 cases of breast cancer over 306,298 person years among women with the lowest intake of red meat. This compared with 553 cases per 31,169 person years among women with the highest intake.

This translated to an estimate that higher intake of red meat was associated with a 22% increased risk of breast cancer overall. Each additional serving per day of red meat was associated with a 13% increase in risk of breast cancer (12% in premenopausal and 8% in postmenopausal women).

In contrast, estimates showed a lower risk of breast cancer in postmenopausal women with higher consumption of poultry. Substituting one serving per day of poultry for one serving per day of red meat - in the statistical model - was associated with a 17% lower risk of breast cancer overall and a 24% lower risk of postmenopausal breast cancer.

Furthermore, substituting one serving per day of combined legumes, nuts, poultry, and fish for one serving per day of red meat was associated with a 14% lower risk of breast cancer overall and premenopausal breast cancer.

The authors conclude that higher red meat intake in early adulthood "may be a risk factor for breast cancer, and replacing red meat with a combination of legumes, poultry, nuts and fish may reduce the risk of breast cancer." Further study of the relation between diet in early adulthood and risk of breast cancer is needed, they add.

More information: Paper: www.bmj.com/content/348/bmj.g3437

Provided by British Medical Journal