Grass Pea Consumption and Neurolathyrism

Summary of published paper

Neurolathyrism is a neurodegenerative and irreversible spastic paraparesis\(^1\) that can be crippling and lead to complete dependency. This disorder can be caused by excessive consumption of the drought resistant pulse, grass pea (Lathyrus sativus)\(^2\). All major famines and chronic food shortages in Ethiopia from the mid-1970s onwards have been accompanied by reports of neurolathyrism epidemics. A recent research study examined whether addition of food-aid cereals to grass pea foods reduced the risk of neurolathyrism during severe famines.

During the epidemic in Ethiopia between 1995 and 1999, a neurolathyrism surveillance system was set up in Delanta Dawint, one of the most affected districts. The research team conducted a correlational study of the amount of food aid that reached the population. They also compared, in a retrospective case control study, the types of grass pea preparations and cereal mixtures consumed by all people who developed the condition (identified through the surveillance system) and by controls in Asim Elana, a severely hit village.

Information on the proportion and type of cereals added to grass-pea foods was obtained from the female household member who prepared food. This information was collected for six months before the first detected case, and until the end of the epidemic. The enumerators classified the proportion of food aid cereal to grass pea as at least one third or less than one third. Spearman's correlation coefficient was calculated to assess the association between the incidence of neurolathyrism and the amount of cereal food aid distributed.

Between September 1995 and December 31st 2000, a total of 2035 new cases of the condition were detected in Delanta Dawint district (period prevalence of 12.3 per 1000). There was a significant negative correlation between new cases per 1000 and the per-person amount of food aid distributed. The food aid mainly consisted of wheat and maize, with limited supplementary rations of vegetable oil. However, delivery became irregular and delayed and the amount of food aid fell, which coincided with the peak of the epidemic in 1997 when 1454 new cases were reported.

In the case control study, the consumption of grass pea in roasted, boiled and raw, unripe seed form was associated with an increased risk of neurolathyrism, whereas no raised risk was noted for the fermented pancake, unleavened bread and gravy preparations. Cereals are sometimes mixed with grass pea in the boiled, fermented pancake and unleavened bread forms. Use of cereal and grass-pea flour mixtures for these preparations reduced the risk of paralysis if they contained more than a third cereal. The addition of wheat and maize to grass-pea...
preparations could compensate for the deficiency of methionine and cysteine, as well as diluting the concentration of toxin.

Susceptibility to neurolathyrism varies among individuals and communities, and an increased risk of paralysis is associated with the male sex and young age. The study controlled for the effects of age and sex in the logistic regression analysis, but was unable to control perfectly for socioeconomic variables and interfering acute-illness episodes.

The study authors highlighted how reports were showing that only grass pea was resisting the current drought in most neurolathyrism prone areas, and that the population is increasingly relying on this pulse. The authors concluded that food aid should therefore not be restricted to the almost starving, but should also be urgently sent to people in neurolathyrism prone areas before they are forced into exclusive grass-pea consumption. Dietary information, education and communication on safe grass-pea preparations are also needed.


2Increased muscle tone leading to weakness of both lower limbs

3The clinical symptoms of neurolathyrism are identical to those of 'konzo', a crippling disease caused by overconsumption of insufficiently treated cassava (Manihot esculenta). See Field Exchange 16, Suspected toxic ingestion outbreak in central Afghanistan, pp7-9, August 2002

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