Niacin deficiency and pellagra in Angola

Summary of published research

A recent study initiated by the World Food Programme (WFP), in conjunction with the government of Angola and various implementing partners, set out to investigate the prevalence of niacin deficiency in post-war Angola and the relationship with dietary intake, poverty, and anthropometric status. Interest in the epidemiology of niacin deficiency in the context of the HIV pandemic has re-emerged because of evidence that tryptophan metabolism, and thereby niacin status, may be particularly vulnerable during HIV infection and play a role in the pathogenesis of AIDS.

Admission data from 1999 to 2004 from the pellagra treatment clinic in Kuito, Angola were analysed. New patients admitted over one year of age were examined and urine and blood samples were collected. A multi-stage cluster population survey collected data on anthropometric measures, household dietary intakes, socioeconomic status, and clinical signs of pellagra in women and children. Urinary excretion of 1-methylnicotinamide, 1-methyl-2-pyridone-5-carboxymide, and creatinine was measured and haemoglobin (Hb) concentrations were measured with a portable photometer. There were a number of constraints to the survey; population figures were out of date and failed to take account of displacement and migration, while land mines on roads and in other areas meant that certain locations were excluded from the survey area.

The survey found that incidence of clinical pellagra has not decreased since the end of the civil war in 2002. Low excretion of niacin metabolites was confirmed in 10 out of 11 of all new clinic patients. Survey data were collected for 723 women aged 15-49 years and for 690 children aged 6-59 months. Excretion of niacin
metabolites was low in 29.4% of the women and 6% of the children, and the creatinine-adjusted concentrations were significantly lower in the women than in the children (P<0.001, t-test). In children, niacin status was positively correlated with the household consumption of peanuts ($r = 0.374$, $P = 0.001$) and eggs ($r = 0.290$, $P = 0.012$) but negatively correlated with socioeconomic status ($r = -0.228$, $P= 0.037$). Because peanuts and eggs are known to be rich sources of niacin, the protective effect of these foods was not unexpected.

The expected decrease in pellagra incidence after the end of the civil war has not occurred. This is the first report by a household population survey of niacin status in a region with endemic pellagra, and has brought to light a serious prevalence of low and deficient niacin status in women. Nearly one in three women were found to be niacin deficient. The identification of niacin deficiency as a public health problem should refocus attention on this nutritional deficiency in Angola and other areas of Africa where maize is the staple. While WFP is now providing fortified maize flour to vulnerable groups in Bie province, this study suggests that there may be a need for a national flour fortification initiative and other locally targeted interventions.