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EDITORIAL

Beyond science: the salt debate

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INTRODUCTION

Man is the only mammal that consumes large amounts of salt. It is also the only species in which hypertension occurs. Obviously there is a relation between these two facts. Indeed, the internist Professor Borst from Amsterdam put forward experimental proof for this notion. By expelling salt with (imperfect) diuretics, patients with even severe hypertension were cured.[1] Later, in an exemplary experimental set-up2 he showed that a salt-retaining substance (liquorice) caused hypertension, bringing a pathophysiological explanation as well. It is impossible to summarise briefly the huge amount of experimental and epidemiological data which have since confirmed the relation between salt and blood pressure. Yet, despite overwhelming evidence, salt restriction as the basis of hypertension treatment has not gained general acceptance. The reasons of this deplorable development are the subject of this editorial.

SALT REDUCTION

In (hypertensive) patients

First of all, two aspects need to be distinguished: one is the use of salt restriction in patients with hypertension, and the other is salt restriction as a preventive health measure for the whole population.

While nobody denies the desirability of salt restriction for hypertensive patients, physicians do not actually implement it (any more). One explanation is that only half of the patients are 'salt sensitive'. Nevertheless this measure also increases the sensitivity for most antihypertensive drugs and makes them more effective.

The main reason for the neglect of salt restriction is doubtlessly the overpowering promotion campaigns for new antihypertensive drugs, which constitute huge economic interests. But indolence of doctors and patients is also an important factor. It is easier to prescribe a pill than to follow a diet or to explain the necessity of salt restriction in time-consuming talks. Changes in the doctor-patient relation are probably influential: patients have become more 'independent' and doctors feel less responsibility as 'providers for the health consumers'.

In practice, it is also difficult to obtain food that is low in salt. In the USA, this is virtually impossible.

As a result of these developments a large number of hypertensive patients receive insufficient treatment although the means for it are available. Most serious is the fact that patients without renal function on dialysis treatment cannot get rid of the salt they ingest with 'normal' food. Thus their body fluid expands with many litres between two dialyses, which have to be removed by rapid 'ultrafiltration'. As this is often only partly successful, they remain volume expanded and hypertensive. In contrast, a strategy based on effective salt restriction can achieve normal blood pressure without drugs in 90% of the patients and so decreases cardiovascular mortality.[3]

In the general population

While there is no fundamental difference in opinion about the effect of salt on established hypertension, large controversies exist around the desirability of salt restriction as a measure of general health. Although there are many indications that this could prevent development of hypertension, strict 'evidence-based' proof is lacking. It is then quite amazing how emotional the debate often becomes.

In 1984, the American Food and Drug Administration concluded that moderate salt restriction provides important advantages, while there are no indications that this would have any untoward effects on health. Norwegian and British committees gave similar recommendations. Hereupon, a group of distinguished hypertension experts published a letter in the Lancet,[4] in which they called the advice 'irresponsible and misguided'. They accused the advocates of salt restriction of pursuing an 'evangelical crusade'.

A worldwide investigation in 1988, the Intersalt Study[5] did not bring the expected solution. While it confirmed the

absence of hypertension in primitive communities with very low salt intake, initially a clear relationship between salt and blood pressure was not reported in the rest of the world. However, a subsequent analysis[6] showed a strong correlation and concluded that 'the results support the recommendation of salt restriction to prevent and control hypertension'.[7] Following this, the Salt Institute made its own analysis which came to the opposite conclusion.[8]
The influential journal 'Science' also joined the battle, calling it 'the longest, most vitriolic and surrealistic discussion in medicine'. The author of this blunt article accused supporters of salt restriction of being short-sighted, unscientific and politically motivated.[8]

INFLUENCE OF DIFFERENT INDUSTRIAL COMPANIES

From these examples it appears obvious that non-scientific 'lobbies' are also active in the field. Their tactics are to spread doubt, just like the tobacco and sugar industies once did. It was clear that the salt industry was able to engage researchers and subsidise articles supporting their interests. Also the pharmaceutical industry may not acclaim salt restriction, as this will reduce the need for blood pressure lowering drugs. Then there is the beer and soft drink industry, which, out of well-considered self-interest, has invested in chips and other salty snacks. Indeed, it was recently shown that salt intake, by stimulating consumption of soft drinks, increases obesity in childern.[9]
But the most important participant in this issue is the food industry. In our Western society, nearly 90% of ingested salt comes from prepared food (including bread). The consumer is not aware of that, which makes effective salt restriction virtually impossible. Therefore the advice often given by doctors of 'not to add salt to the food' can reduce intake by only 10 to 15%, which is definitely insufficient. Understandibly, the industry has no interest in reducing the salt content of their products.[10] If a tin of vegetables contains a little bit more salt than that of the competitor, it will be found more 'tasty'. Not surprisingly, a proposal in the English parliament to oblige the industry to mention the salt content on their products was initially blocked by the conservative party.

THE LOBBY FOR THE REDUCTION OF SALT IN FOOD PRODUCTS: 'CASH AND WASH'

It is the big merit of the English internist-investigator Graham MacGregor to have succeeded, despite these difficulties, to bring about a reduction in the salt content of many nutritients. He realised that the 'need' for salt is a habit (a mild form of addiction) that can be changed by gradual reduction in the salt content of the food consumed. He calculated that with a modest reduction in the current 15 grams (about 255 mmol sodium) to 9 grams NaCl daily (about 153 mmol sodium), 70,000 cases of stroke and heart attack could be prevented in the UK.[11]

Recently, strong support for the benefit of general salt reduction was provided by an investigation by Cook *et al.*[12] In a long-term follow-up of two groups of borderline hypertensive but otherwise healthy individuals who had been comprehensively counselled on reducing salt intake, cardiovascular events were 25% lower than in controls. Most remarkable was their observation that this was independent of the drop in blood pressure. It thus appears that even moderate salt reduction (the observed decreases were 44 and 33 mmol/day) has a favourable influence on health. It is beyond the scope of this editorial to speculate on the pathophysiological explanation of this finding.

In 1996, the Consensus Action on Salt and Health (CASH) was started.[13] Here, a group of specialists worked together with the aim to inform the food industry, the Government, other health professionals and even the whole population about the harmful effects of salt and bring about a reduction of salt consumption. They have since been successful in getting many supermarkets and manufacturers to adopt a policy of gradually reducing the salt content of their products and the government to finance a campaign to raise awareness of the effects of salt on health. Last year, they reported that the mean daily salt consumption in the UK had decreased by 0.5 grams. In the most recent newsletter daily salt was reduced from 9.5 to 8.6 grams daily.[14]

In 2005, World Action on Salt and Health (WASH) was launched with the aim to replicate the same progress in other countries. At present, 334 members from 80 countries have registered and this year 21 countries actively participated in a 'salt awareness week'. It should be realised that a change in lifestyle of the population cannot be accomplished by declarations of experts alone, but needs a lot of coordinated effort.

CONCLUSION

Finally, what are the implications of these developments for the Netherlands? A task force 'Salt in Foods' was established in order to stimulate the industry to reduce salt in their products (www.worldactiononsalt.com). Some individual initiatives are going on, but to be effective a Dutch WASH committee should be formally established in which physicians, dieticians and other health professionals,

nonprofit patient organisations and politicians participate. Financial support to maintain a secretariat should be obtained. Special responsibility rests with the Kidney Foundation and the Dutch Heart Foundation. From a scientific point of view the Dutch Hypertension Society should give support to the initiatives in the Netherlands.

The long history of salt sketched above may seem frustrating, but renewed attention and energy have resulted in recent successes illustrating that with dedication and perseverence, miracles can still happen. And the citation from the Plutarch, as translated in the book written by Denton, that 'first there is salt without which practically nothing is eatable'[15] is no longer believed to be the true with regards to our daily food.

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