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Fluoridation and cancer

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Reiniging van die kolon

Die reiniging van die kolon deur dieetmaatreëls, lakseermiddels en klismas as voorbereiding vir endoskopiese kolononderseek of 'n derm-operasie is nie eenvoudig nie.[1] Dit is lastig vir die pasiënt, tydrowend en die resultaat is nie altyd voldoende nie. Veral die sekumgebied is met die gewone voorbereidingsmetodes moeilik om te reinig. Deur fekale verontreiniging word afwykinge by endoskopiese en röntgenologiese ondersoek maklik gemis. In die VSA, volgens Miller,[2] word die diagnose van kolonkarsinoom in 20% van gevalle röntgenologies gemis en hiervan is 57% toe te skryf aan fekale verontreiniging. Lakseermiddels is nie aangewys by pasiënte met ernstige derm-inflammasie nie. Dit is dus duidelik dat daar na ander metodes om die derm vinnig en effektief te reinig, gesoek moet word.

In 1965 het Dillard *et al.*[3] gebruik gemaak van totale dermspoeling om water- en soutabsorpsie in die derm te bestudeer. Daar is gevrees vir volume-oorbelasting van die sirkulasie, want dit is bekend dat toediening van groot hoeveelhede water sonder elektroliete water-intoksikasie en selfs die dood kan veroorsaak. Dié vrees is egter weggeneem deur ondersoek met gebruik van isotope wat aangetoon het dat by infusie van 'n isotoniese oplossing die netto absorpsie van natrium van die lumen na plasma slegs gering is.[4] In die laaste dekade het verskillende outeurs die gunstige resultate van totale dermspoeling deur toediening per mond of per maagbuis van 'n elektrolietoplossing as voorbereiding vir kolonoskopie of dermchirurgie beskryf.[1]

Speelman *et al.*[1] vind dat die gebruik van totale dermspoeling 'n veilige en effektiewe metode is vir dermvoorbereiding. Ileus, kardiale dekompensasie en nierinsuffisiënsie is kontraïndikasies vir dié metode. By stenose van die dun- of dikderm moet groot versigtigheid aan die dag gelê word.

Taat *et al.*[5] het die metode by 214 pasiënte toegepas. Hulle het gevind dat hierdie metode aanvaarbaar en effektief by 187 (87%) van die pasiënte was. Die metode is deur versigtige seleksie toepasbaar by stenoserende en aktiewe inflammatoriese dermsiektes. Elektroliet-verskuiwinge en vogretensie was sonder kliniese betekenis. Voordele van die metode is die relatiewe kort pre-operatiewe hospitaalverblyf en dat duur dieetmaatreëls onnodig is.

In 'n redaksionele kommentaar[6] skryf Van Tongeren dat die massa van die pasiënte tydens dermspoeling globaal met 2 kg vermeerder. Dit kan verminder word deur vóór die spoeling 500 ml mannitoloplossing toe te dien. Die bestanddele van die spoeloplossing kan so gemeng word dat waterabsorpsie feitlik nul is en so ook die gewigsvermeerdering. Sulke oplossings het duidelike voordele by pasiënte wat dit met moeite weer vlot kan uitskei.

1. Speelman, P., Bartelsman, J. F. W. M. en Huibregtse, K. (1981): Ned. T. Geneesk., **125**, 1453.
2. Miller, R. E. (1976): Gastroenterology, **70**, 289.
3. Dillard, R. L., Eastman, H. en Fordtran, J. S. (1965): *Ibid.*, **49**, 991.
4. Love, A. H. G., Rohde, J. E., Abrams, M. E. *et al.* (1973): Clin. Sci., **44**, 267.
5. Taat, C. W., Boissevain, A. C. H., Van Goevorden, F. *et al.* (1981): Ned. T. Geneesk., **125**, 1456.
6. Van Tongeren, J. H. M. (1981): *Ibid.*, **125**, 1464.

Opinion/Opinie

Fluoridation and cancer

In the USA, roughly half of the population ingest recommended levels of fluoride, derived either from fluoridated drinking water or from water which contains naturally occurring fluoride.[1] This proportion is higher than that prevailing in European countries. Dental caries can be reduced by 50 - 60% by the regular ingestion of water containing optimal levels of fluoride.[2]

Allegations of ill-effects from fluoridated water continue to excite vehement argument. A committee recently set up by the Australian government maintained that "There is "massive evidence" to show that fluoridation at recommended levels has no harmful effects on the health of the community and assertions about toxic, carcinogenic, mutagenic, teratogenic or allergic effects on humans are not supported by sound scientific evidence'.[3] Similar conclusions have been reached by others.[4,5]

The medical argument most prominently advanced by anti-fluoridationists concerns their belief that fluoride promotes or causes cancer. The most publicized claims in this respect are those made by Yiamouyiannis and Burk.[6] They have maintained, *inter alia*, that in Birmingham, UK, the mortality rate from cancer has risen especially rapidly (8%) since fluoridation of water supplies commenced in 1964. In contrast, during the same period the cancer mortality rate in Manchester, where water is not fluoridated, has risen only slightly (1,5%). However, the validity of the conclusions reached has been widely disputed. Kinlen *et al.*[7] have examined the changes in cancer mortality that have occurred in the West Midlands conurbation, as recorded in the Registrar-General's analysis of cancer mortality by area of residence. Data were assessed for the periods 1959-1963 and 1969-1973. Ironically, it transpired that mortality from cancer

rose *more* in the non-fluoridated parts of the conurbation than in the fluoridated areas of Birmingham and Solihull (9,1% *v.* 5,9%). Kinlen *et al.* insisted that their data were most appropriate for comparison, as the areas cited are geographically close and of similar residential and industrial character.

Consonant with these findings is information given in a recent publication on 'Fluoridation and cancer mortality in New Zealand', in which Goodall *et al.*[8] concluded that 'there was no support for the assertion that fluoridation of public water supplies resulted in any increase in cancer mortality. On the contrary there was some evidence that the rate of increase in cancer mortality over the 15-year period 1961-1976 had been greater in unfluoridated areas than that occurring in areas with fluoridated water supplies.' Furthermore, Smith[9] (also in New Zealand) recalculated the data used by Yiamouyannis and Burk[6] and came to the same conclusion as that reached by Goodall *et al.* The latter, accordingly, have laid emphasis on the emergence of what might be 'an important finding (the exact opposite of what the anti-fluoridationists were claiming)'. In commenting on these findings, a leading article in the *New Zealand Dental Journal*[10] affirmed that there was now solid data 'which clearly reveal that the alarmist and, we submit, vicious allegations that fluoridation causes cancer are without foundation'. If, as it would seem, standardized mortality ratios for cancer can be significantly lower in fluoridated areas compared with non-fluoridated but otherwise comparable areas, then pro-fluoridationists could well be pressing to achieve a far greater public benefit than intended. Fluoridation, by virtue of its retarding effect on caries development, can certainly reduce associated pain and sickness, but have negligible effect on mortality; if the above relationship is valid, however, then fluoridation could be regarded as a measure capable, directly or indirectly, of promoting fewer deaths from cancer.

At much the same time as the foregoing studies were published, a 'Commentary from Westminster'[11] indicated that MPs opposing fluoridation were euphoric over recent setbacks to the practice. The reasons for this response were: the damaging comparison of the cancer mortality rates of Birmingham and Manchester (just cited and now invalidated); 'the successful American court action to prevent Pennsylvania City authorities from fluoridating; the decision of Quebec to end such water treatment, and a general running down in the West of fluoridation'. But to dampen this elation it was stated that the British Government remains 'firmly in favour of fluoridation'. However, it was made clear that 'the Government could not legislate for fluoridation if it wanted to. MPs may not understand the medical arguments for or against fluoridation. But a great number of them, particularly in this House of Commons, respond powerfully to arguments based on the "freedom of choice" keystone. That includes freedom to advertise cigarettes as attractively as possible (and concomitant freedom not to buy them), freedom not to wear seat belts in motor cars, and freedom to drink unfluoridated water. A Government bill to introduce fluoridation of reservoirs would not even get a second reading.' As an index of the extent of appreciation of the problem, the Westminster commentary related that the chief antagonist among MPs 'pours scorn on the recent survey of public attitudes in the West Midlands, which suggested that two-thirds of those questioned favoured fluoridation. In his view the key question — do you think fluoride should be added to water if it can reduce dental decay? — was absurdly biased. It would have been slightly fairer to ask, do you think fluoride should be added to water even though it might cause cancer?'[11]

It is illuminating that in journals in which assertions that fluoridation causes cancer were successfully challenged, the findings were not contested by anti-fluoridationists. Indeed, both overseas and in South Africa,[12] these people show enormous reluctance to set out their arguments with appropriate documentation. It could well be that anti-fluoridationists realize that ultimately their defence lies not in the persuasiveness of medical arguments, but on the '"freedom of choice" keystone'.

Yet this self-same 'freedom of choice', although in the forefront of democratic principles, can, when misused, become the quintessence of selfishness. To use the examples mentioned, the man who elects to be a heavy smoker can not only harm the respiratory capacities of his non-smoking fellow men,[13] but can double the risk of his non-smoking wife dying from lung cancer.[14] The man who chooses not to use his seat belt undoubtedly prejudices the safety of others. The belligerent minority who actively oppose fluoridation (quite apart from the dental caries issue) could conceivably, in deprived communities, be regarded as augmenting deaths from cancer. Should this possibility be deemed preposterous, it should be remembered that the degree of hardness of drinking water, in some areas, has been shown to have a very significant bearing (as yet unexplained) on the mortality rate from coronary heart disease.[15] Hence, the possibility of an inverse relationship between fluoride concentration in drinking water and proneness to cancer merits closer examination. As a first step to elucidation, it is urgent to learn what exactly are the differential cancer patterns which prevail in appropriately matched fluoridated and non-fluoridated regions in the USA, the UK and New Zealand. Which cancer or cancers appear sensitive to fluoride concentration?

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5. Rogot, E., Sharrett, A. R., Feinleib, M. *et al.* (1978): Amer. J. Epidemiol., **107**, 104.
6. Yiamouyiannis, J. and Burk, D. (1977): Fluoride, **10**, 102.
7. Kinlen, L. J., Clarke, C. A. and Doll, R. (1980): Lancet, **2**, 199.
8. Goodall, C. M., Foster, F. H. and Fraser, J. (1980): N.Z. med. J., **92**, 164.
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