COMMENTARY

The Maori, Behavior, Modern Diets and Colorectal Cancers

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Abstract

Variation in diet and the rates of colorectal cancers have confounded researchers in recent years. Comparisons of populations in different geographic locations and of different ethnic origins have shown considerable differences in disease frequency, location and relation to diet. This paper revisits an earlier comparison of Maori rates of disease and diet based on data from 20 years ago with surprising changes in disease rates today.

Keywords: Maori - colorectal cancers - behavior and disease - diet and pathology

Asian Pacific J Cancer Prev, **13**, 1711-1712

Introduction

A paper by Pearson, Gill and Rowland (2009) in Nutrition Reviews summarizes the literature on fecal water, diet and colon cancer. One element that is absent from the review is how behavior may affect fecal water pH and the time exposure of colon tissue to its components. Shaw, et al. (2006) recently published a paper on colorectal cancers in New Zealand. Caldararo (1988) did some fieldwork in Polynesia in the 1980s and tried to understand the low rates of colorectal cancers reported then by physicians in the Maori population (e.g., Smith, et al., 1985). Caldararo published a hypothesis on findings in the American Journal of Epidemiology in 1988. Dr. Schiffman (1986) had been doing research on this topic and his published work led me to consider a behavioral factor related to the distribution of colorectal cancers, especially in New Zealand and other locations in Polynesia. The Smith et al. (1985) article also left open the possibility of a behavioral explanation at the time Caldararo wrote the article as did work on Japanese populations, while Thomson & Shaw (2002) proposed specific dietary additives in traditional Maori diet that might explain lower rates among Maori eating this diet. This conclusion seems at odds with data published a half century ago by Prior et al. (1964).

Discussion

Recently I noted that cancer registration rates among Maori women were still lower than non-Maori women but the mortality rates were similar as reported by Maori Health (2010) while Maori men's rates were nearly identical to non-Maori males. This is quite a change from data reported in the 1980s. The Shaw study (2006) foundthat there has been a 50% increase among the Maori men and a 40% increase among poor Maori women over rich females. Bonithon-Kopp and Benhamiche (1999) argue that there seem to be several colorectal cancers, both in physical position (left and right colon cancers) that seems to differ significantly among men and women regardless of geography and yet a very clear male predominance. This idea of many CRSs is supported by the 90 mutant genes associated with colorectal cancers and gastric cancers (Richards et al., 1999), where the average case demonstrates at least 9 specific mutations and then there are microsatellite combinations as well, so a combination of CIN in 85% of the cases and MIS involvement. This indicates a considerable amount of mutagenic exposure over time as defined by Mel Greaves (2000) in his clonal/quasi-species and multiple insult theory and other findings by Fearon & Vogelstein (1990).

The role of fecal water has also been investigated, though work is only beginning to approach a comprehensive picture with a variety of effects apparent, including induction of COX-2 and AP-1 genes as well as reduction in cellular repair (Fearon & Vogelstein, 1990). The affects of diets on fecal water is the focus of work and some evidence has shown that change in pH can promote CRC. Since there is evidence of an increase in consumption of soft drinks among Polynesians and specifically Maori, comparing reports from nearly 50 years ago (Prior et al., 1964) with current levels reported by the New Zealand Ministry of Health (25 October 2007 from diabetes surveys, New Zealand Ministry of Health, 2007). This might explain some of the increase of CRC in the lower socio-economic group of Maori females reported by Maori Health.

Conclusion

This, brings us back to Caldararo's initial hypothesis regarding a behavioral factor (coupled with increased soft drink consumption). Schiffman (1988), discounted Caldararo's central proposal where sitting down (squatting) allowed the passage of more fecal matter in his small sample, but verified Caldararo's theory that this behavior would result in more fecapentane excretion

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and thus less exposure to mutagenic activity. This would be consistent with recent findings, including Shaw et al. (2006). This is especially likely given the failure to find a dietary explanation. If Maori men have changed their habits over the past 30 years significantly to eliminate squatting when urinating, then passage of mutagens would be reduced and a greater exposure to epithelial tissue would obtain with resulting potential for transformation in CIN and MIS combinations. I realize that this would require considerable new and expensive research but the other problem with Schiffman's study than the small numbers, was the fact that the population was elderly. I think that a study that tracked young Maori men who squatted at urination vs those that did not might generate a more robust result given the different way young men eat, drink and behave vs elderly men in Eastern North America. Exposure to the mutagens in a young population and then through middle age could adequately test the theory.

It might be, however, based on Caldararo's research from the 80s, that this behavior was already changing rapidly and yet a subset of Polynesians might be found to form a useful test population.

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