



Ironies most bittersweet

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Who sees things develop from their origin sees them better. — Aristotle

We cannot judge what is right to do now without knowing what has gone before. — Thomas Berger¹

Nothing reveals a society better than the chronicles of its diseases. All health problems have histories, and studying them can bring insight, if not exegesis.

In 1904 a 400-year-old notarial document was discovered in Spain whose contents were both ironic and bittersweet. It described one Cristóbal Colón, a “citizen of Genoa,” son of a poor wool-weaver, who was working in Madeira as a sugar merchant. In 1492 this same Colón, now Captain General for Queen Isabel of Castile and her husband King Hernando of Aragon, embarked with 3 small caravels from the port village of Palos, ostensibly to find a new shipping route to Asia. The “New World” that “Columbus” and his culture invaded on the other side of the ocean was inhabited by peoples whom the Europeans did not accept as human until a pronouncement by the Roman Church and the Catholic monarchs of Spain declared them so.² As anthropologists would later determine, their dark eyes, course straight scalp hair, virtual absence of facial and body hair, and lack of blood types A, B, D and Rh declared their common descent from a narrow gene pool of Mongolian origin.³ Diphtheria, influenza, leprosy, measles, plague, pleurisy, smallpox, typhus, and tuberculosis were unknown to them, but many of the “Indians” of Hispaniola suffered from a curious pustular ailment.

Most societies north of what is now Mexico used what has come to be known as the Powhatan food supply system. Two-thirds of their nutritional intake came from hunting and gathering, and the cultivation of corn, beans and squash produced the other third. This system had evolved into what ecohistorian Albert Cowdrey has described as “the most energy-efficient of all economic systems ... fine-tuned by millennia of learning and transmission [to a] high degree of subtlety and sophistication.”⁴ In addition, the Amerindians’ obstetric knowledge was more advanced than that of the Europeans, their medical system was at least comparable, and their pharmacology more effective and extensive.

How is it that the descendants of those whose cultures were displaced by the Europeans are beset by such a high prevalence of diabetes? Why was a problem at least partly

genetic not eliminated by natural selection? The answers may be found in the concept of the “thrifty genotype” first proposed and later modified by geneticist James V. Neel,^{5,6} or in its later variants, including the “New World syndrome,”⁷ “low carbohydrate/cold environment adaptation,”⁸ the “Northern hunting adaptation,”⁹ and the “thrifty phenotype.”¹⁰

During most of the human chronicle, periods of abundance have alternated with reduced food intake and even famine. People whose pancreatic response minimized postprandial hyperglycemia and glycosuria were better equipped to survive starvation. Obesity was uncommon in hunter-gatherer cultures, as was inactivity. However, increased insulin production over time also produced excess insulin resistance. In such circumstances, if food became available continuously with minimal effort, the islets of Langerhans might become hyalinized, exhausted, unresponsive and even destroyed. The same genetic pool that produced common morphologic characteristics accounted for the wide distribution of genes that caused the overproduction of insulin and its antagonists. When food became continuously and easily available with a minimum of labour, obesity and, ultimately, diabetes resulted.

“The sweet disease” was unknown among the indigenous peoples of North America until approximately 1940¹¹ and has become noticeable among aboriginal Canadians only in the last 2 decades. Prevalence is influenced by both geographic and genetic variables; the highest rates occur in southern Canada, where most of the Euro-Canadian population resides.¹² Adjusted for age, the diabetes incidence rate among Canadian native women is 5.3 times higher, and among men 3.3 times higher, than among other Canadians. The condition affects one quarter of aboriginal people over age 45. In 1991, 6% of aboriginal Canadians aged 15 years and older reported that they were diabetic, compared with 2% of the general population.¹³ In that same year, almost 20% of adult Status Indian women in Manitoba had diabetes.¹⁴

Despite pronouncements of various organizations and experts, the validity of tests for gestational diabetes — and of the concept of gestational diabetes itself — is open to question.^{15,16} In the general population, the presence of the label “gestational diabetes” may bias the behaviour of health care providers, leading to unjustifiably lower thresholds for cesarean delivery and other interventions.¹⁷ However, in the aboriginal population, a diagnosis of gestational diabetes may



point to the presence of frank diabetes, which is a different matter. In one study, more than 70% of aboriginal women in whom gestational diabetes was diagnosed became overtly diabetic within 4 years.¹⁸ Further, the odds that an aboriginal Canadian with diabetes will die of the disease is 2 to 4 times higher than for a diabetic Canadian of European descent.¹⁹ It is time to move on from prevalence studies to longitudinal assessment and the search for culturally linked remedies.

Two studies of Cree populations published in this issue^{20,21} add to the considerable evidence that diabetes is endemic in Canadian aboriginal populations. Access to food is governed by culture, as is the expenditure of energy. There is no doubt that obesity, once unusual in Amerindian populations, is now common. Physical activity has decreased with the loss of traditional lifestyles. Carbohydrates and fats figure more prominently in the diet, and proteins less. Even in tribal groups in which diabetes has remained uncommon, the sweet disease is now emerging more often and earlier in life. And, as the nutrition of a diabetic woman's fetus is compromised, so is its future, pancreatic and otherwise.

Whether the voyages of Columbus and those who followed him were a blessing or curse I leave to the reader's musing. However, while European society gained wealth, power and a future by expanding to the Americas, this New World was transformed — in many ways to its detriment. There can be no going back, other than to try to understand what happened. If there is any reversal of the pandemic of diabetes among aboriginal peoples, it will occur only through internal, culturally-driven prevention and the reversal of potentially fatal changes in diet, perception, attitudes and levels of physical activity.

In March 1493, 224 days after he had left, Colón returned in triumph to the royal court in Barcelona. Within 2 months, the court issued formal instructions for a second voyage of discovery. Meanwhile, a mysterious affliction had broken out in the city, resulting in genital ulcers, bone pain, offensive discharges, bodily swellings, destruction of the nose and oropharynx and, in some cases, insanity and death.²² Diaz de Isla, a renowned doctor practising in Barcelona at the time of the outbreak, reported treating sailors from the Admiral's first crew for those symptoms. In the words of Voltaire, "The first fruit gathered by the Spaniards from their conquest of the New World was the pox." Meanwhile, Rodrigo de Jerez, one of the Columbus's crew, had become the first person to smoke in Europe. For that action he was arrested, accused of sorcery, brought before the Inquisition and imprisoned for 7 years. But these are other chronicles.

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