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The French Paradox and Diabetic Patients

The fact that dietary fat intake is similar to that in other countries, and yet the risk of death by ischemic heart disease in France is low, was first formulated as a “French Paradox” in the early 1980s (1). The age-standardized death rates from ischemic heart disease were 124 for 100,000 men in France, in comparison to 447 in England and Wales and to 318 in the U.S., for men aged between 40 and 74 years in 1990 (*International Classification of Diseases* codes 410–414 [2]). This low rate exists despite the fact that the major risk factors, high cholesterol, hypertension, and smoking, are known (based on the MONICA Study) to have frequencies that are not lower than in other countries (2). The main hypothesis as to why cardiovascular disease is less frequent in France is the higher consumption of alcohol in the French population (3–5).

French diabetic men are also protected against ischemic heart disease, in compari-

Table 1—Absolute and relative risk of death by ischemic heart disease by glucose tolerance status

Study	Age-group (years)	Glucose tolerance status	n	Death by ischemic heart disease (age-adjusted)	
				Rate/1,000 person-years	Risk ratio (95% CI)
Rancho Bernardo (6)	40–79	Nondiabetic	893	7.1*	1
		Diabetic	207	12.1*	1.8 (1.2–2.7)
Whitehall (7)	40–64	Normoglycemic	17,051	4.7	1
		Glucose-intolerant	999	6.7	1.4 (1.2–1.8)
		New diabetic	56	28.1	3.9 (2.4–6.4)
		Known diabetic	121	10.5*	2.2*
Paris Prospective	44–55	Normal	6,156	2.3	1
		IGT	706	4.2	1.7 (1.2–2.5)
		New diabetic	160	5.6	2.4 (1.3–4.6)
		Known diabetic	132	6.0	2.6 (1.3–5.1)

*Calculated from data in paper—not age-adjusted.

son with their English and American counterparts. We present data from three cohort studies of men who were followed for causes of death over ~15 years. These cohorts included men who were known to be diabetic or who were diagnosed at baseline as diabetic. In the Rancho Bernardo study (6), subjects were classified as diabetic by their personal history or if their fasting plasma glucose was ≥ 7.8 mmol/l, and as nondiabetic if they had no personal or family history of diabetes and a fasting plasma glucose < 6.1 mmol/l. In the Whitehall Study (7), men were known as diabetic or classified as a newly diabetic patient based on the 2-h capillary glucose level > 11 mmol/l after a 50-g glucose load, normoglycemic subjects were those in the lower 95% of the 2-h glucose distribution (< 5.4 mmol/l), and the intermediate group was defined as glucose intolerant (Table 1). In the Paris Prospective Study (8), subjects were classified as follows: a known diabetic patient according to whether they had been treated pharmaceutically for diabetes, a new diabetic patient if their 2-h plasma glucose was > 11.1 mmol/l after a 75-g oral glucose load, and impaired glucose tolerant (IGT) if nondiabetic with a 2-h glucose > 7.8 mmol/l.

As expected, the French men had lower absolute rates of death by ischemic heart disease in comparison to the English and American men, with death rates of 2.3, 4.7, and 7.1 per 1,000 person-years, respectively, in the normal glucose tolerant group (Table 1). For the Whitehall Study, the death rate was very high for the new diabetic subjects. These subjects were diagnosed follow-

ing a low oral glucose load of 50 g; thus only the most severely glucose-intolerant subjects (0.3%) were classified as newly diabetic men; perhaps a lower limit would have been more appropriate. The Whitehall “glucose-intolerant” group may well include men who would be classified as diabetic in the Paris Prospective or the Rancho Bernardo Studies. The absolute death rates in the diabetic men were ~12 in Rancho Bernardo, 16 in Whitehall, and 6 in Paris.

The relative risks of death by ischemic heart disease of the diabetic subjects, in comparison with the baseline group of normal subjects, are of the same order in all three studies, being close to two. Other population studies including diabetic subjects give similar results (9).

Thus, the French Paradox would appear to apply also to NIDDM patients. If drinking alcohol is associated with a low ischemic heart disease death rate, the diabetic patient as well as nondiabetic subjects should not be completely discouraged from drinking in moderation, but it should be noted that an excessive alcohol consumption may lead to diabetes (8).

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The Tactile Circumferential Discriminator: an Instrument for Detecting Patients at Risk of Foot Ulceration

In a paper recently published in *Diabetes Care*, L. Vileikyte et al. (1) show that the tactile circumferential discriminator (TCD) is a simple screening device to identify diabetic patients at risk of foot ulceration.

With a similar design, we have published in a recent issue of *Revista de la Asociación Latinoamericana de Diabetes* (2) our experience with the TCD. We studied 57 NIDDM patients (19 women, 38 men). The mean age was 60.02 years and median duration of diabetes was 11.38 years. Vibration perception thresholds (VPTs) were measured with a biothesiometer at the great toe, with the probe balanced vertically on the pulp of the toe. We used a cutoff point of 25 V as a criterion for ulcer risk as Young et al. (3) defined in their prospective study. Tests with the TCD were done using a similar protocol, but were performed over the first phalanx, not on the plantar aspect. We also compared quantitative sensory testing with the 5.07 monofilament.

Although we used different areas of perception, our results were similar. A TCD >6 had a sensitivity and specificity of 81 and 86%, respectively, to find the patients with VPT >25 V. The inability to perceive the 5.07 monofilament had a sensitivity and specificity of 86 and 87%, respectively.

However, to determine the strength of any diagnostic test, it is more important to define the negative predictive values (NPVs) and the positive predictive values (PPVs). In our 57 patients, the PPVs to have VPT >25 V were relatively low (0.54 for TCD >6 and 0.63 for the inability to perceive the 5.07 monofilament). The NPVs, for both, were 0.96. If a patient has a TCD <6 or if the ability to perceive the filament is normal, the chance of having a VPT <25 is 96%.

We believe that these tests have good NPVs and are useful to exclude a level of neuropathy associated with an increased risk for foot ulceration.

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Incidence of Type 1 Diabetes in Germany Is Not Higher Than Predicted

Neu et al. (5) published the incidence of type 1 diabetes in former West Germany. They calculated the incidence in 0- to 14-year-old individuals to be between 10.6 and 11.6 cases per 100,000. The authors repeatedly say that this is much higher than assumed. However, the authors fail to consider the effect of bacille Calmette-Guérin (BCG) vaccination, which can explain the higher rate.

Our studies (1-3) have compared the incidence of type 1 diabetes in 0- to 14-year-olds living in western European countries not administering BCG to the incidence in countries administering BCG starting at birth and school age. The incidence of type 1 diabetes in countries not immunizing with BCG (Iceland, Netherlands, Spain, Belgium, and Luxembourg) was 10.92 cases per 100,000 (range, 9.8-12.4), compared with 7.4 cases per 100,000 (range, 6.8-7.8) in countries immunizing at birth (Republic of Ireland, France, Austria, Switzerland, and Portugal) and 19.02 (range, 16.4-20.8) in countries immunizing at school age (Northern Ireland, England, Scotland, Denmark, and Norway). Our ecological data is supported by analysis of Swedish birth cohorts (1) and by our analysis (unpublished observations) of data from Montreal (4).

BCG was infrequently given in the former West Germany after the early 1980s (World Health Organization data) and the incidence of type 1 diabetes is very similar to that of other countries listed above not giving BCG. The authors made their prediction based on data from the old East Germany, which was 7.4 cases per 100,000.