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Comment

—to: Zalutskaya A, Bornstein SR, Mokhort T, Garmaev D (2003) Did the Chernobyl incident cause an increase in type 1 diabetes mellitus incidence in children and adolescents? Diabetologia 47:147–148 (Letter)

To the Editor: We read with interest the article by A. Zalutskaya and co-workers, which suggested that the Chernobyl incident caused an increase in the incidence of type 1 diabetes mellitus in children and adolescents in Gomel (Belarus) [1]. We do not support this hypothesis because the Chernobyl accident caused widespread effects across Europe, and huge areas were radiocontaminated [2]. The major impact of the accident on human health was a sharp increase in the incidence of thyroid carcinoma and autoimmune thyroid disease in the exposed population [3]. To date, no studies have shown a relationship between the radioactive pollution from Chernobyl and levels of islet cell antibodies, antibodies to insulin, GAD, or protein tyrosine phosphatase IA-2, or genetic risk markers for type 1 diabetes. The nuclear material released by the reactor explosion between 26 April and 5 May 1986 reached the Warmia and Mazury Region in the north of Poland [4, 5]. In this study we analysed the influence of the Chernobyl disaster on the incidence of type 1 diabetes in this region.

We collected data on the incidence of type 1 diabetes between 1994 and 2003 using the same methods as the Europe and Diabetes Aetiology of Childhood Diabetes on an Epidemiological Basis (EURODIAB ACE) and Diabetes Mondiale (DiaMond) studies [6, 7, 8]. The incidence rate was calculated as the number of newly diagnosed cases per 100,000 inhabitants per calendar year. The Poisson test was used to assess time trends. All data were evaluated using capture and recapture methods. The incidence of type 1 diabetes was calculated for two groups of the population: subjects in group 1 were born before 1987 and had been exposed to radiation, whereas those in group 2 were born during or after 1987 and had not been exposed. We also estimated the average incidence of type 1 diabetes in subjects aged 7–15 years old in the two groups. The total study population consisted of 331 individuals (156 females, 175 males; 216 exposed, 115 unexposed).

Figure 1 shows that the incidence rates for cases diagnosed between 1994 and 2003 in the two groups were not significantly different. Table 1 compares the incidence rates for the two groups according to age at diagnosis; none of the relative risks are significantly different from 1.00.

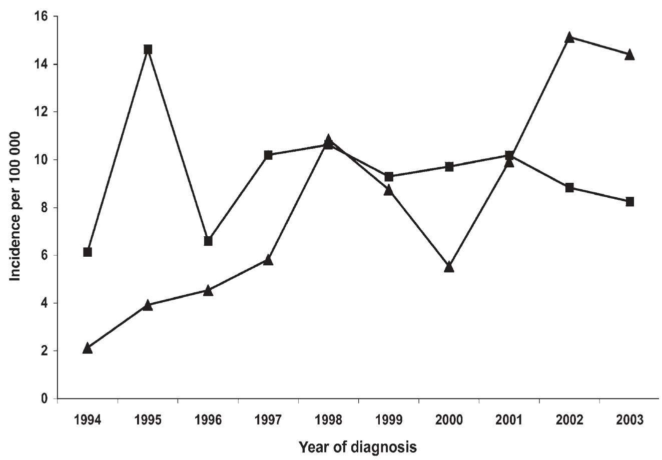

Fig. 1. The graph shows the incidence rates for cases of type 1 diabetes diagnosed between 1994 and 2003 in the radiation-exposed group (black squares) and the unexposed group (black triangles)

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Table 1. Incidence of type 1 diabetes in according to age at diagnosis

Year of diagnosis		Incidence		Relative risk
Exposed group	Non-exposed group	Exposed group	Non-exposed group	
1994	1999	16.0 (6.5–25.4)	11.9 (3.1–20.8)	1.34
1995	2000	13.0 (4.5–21.4)	8.6 (1.1–16.1)	1.51
1996	2001	7.1 (0.9–13.2)	13.8 (4.2–23.3)	0.51
1997	2002	12.6 (4.4–20.9)	13.7 (4.2–23.3)	0.92
1998	2003	15.9 (6.5–25.3)	13.7 (4.2–23.2)	1.16

Values are medians (ranges)

There is evidence that, in Poland and Finland, high levels of radioactive isotopes were only present in food over a short period (1 month in the case of iodine or several months in the case of caesium), apart from in wood mushrooms, which contain high levels of caesium and strontium even now [2, 4, 5]. Thus, it is doubtful that radiation from the Chernobyl incident still affects the incidence of type 1 diabetes. We therefore do not feel that there is sufficient evidence to support a role for radiation in the increased incidence of type 1 diabetes in the area exposed. We are currently searching for other factors responsible for the observed effect, since many parts of Europe experienced an increase in type 1 diabetes during the same period, including areas that were not exposed to radiation from the Chernobyl incident [6, 7, 8].

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References

1. Zalutskaya A, Bornstein SR, Mokhort T, Garmaev D (2003) Did the Chernobyl incident cause an increase in type 1 diabetes mellitus incidence in children and adolescents? Diabetologia 47:147–148 (Letter)
2. Jantunen M, Reponen A, Kauranen P, Vartiainen M (1991) Chernobyl fallout in southern and central Finland. Health Phys 60:427–434
3. Szybinski Z, Huszno B, Zemla B et al. (2003) Incidence of thyroid cancer in the selected areas of iodine deficiency in Poland. J Endocrinol Invest 26 [2 Suppl]:63–70
4. Pietrzak-Flis Z, Krajewski P, Radwan I, Muramatsu Y (2003) Retrospective evaluation of 131I deposition density and thyroid dose in Poland after the Chernobyl accident. Health Phys 84:698–708
5. Zarnowiecki K (1988) Analysis of radioactive contaminations and radiological hazard in Poland after the Chernobyl reactor accident, Report No. 120/D. Central Laboratory for Radiological Protection, Warsaw
6. Green A, Patterson CC; EURODIAB TIGER Study Group (2001) Trends in the incidence of childhood-onset diabetes in Europe 1989-1998. Diabetologia 44 [Suppl 3]:B3–B8
7. Patterson CC, Dahlquist G, Soltesz G, Green A; EURODIAB ACE Study Group (2001) Is childhood-onset type 1 diabetes a wealth-related disease? An ecological analysis of European incidence rates. Diabetologia 44 [Suppl 3]: B9–B16
8. Karvonen M, Viik-Kajander M, Moltchanova E, Libman I, LaPorte R, Tuomilehto J (2000) Incidence of childhood type 1 diabetes worldwide: Diabetes Mondiale (DiaMond) Project Group. Diabetes Care 23:1516–1526

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