

Childhood thyroid cancer since accident at Chernobyl

EDITOR.—We wish to report on a meeting of scientists from the three countries most closely affected by the accident at Chernobyl and from the World Health Organisation to review the programme of screening for and diagnosis of childhood thyroid cancer undertaken since the accident in April 1986. While the central purpose of the screening programme was humanitarian, during the review some of the information compiled was deemed to be of scientific interest.

The table shows that, before the accident, the annual incidences of childhood cancer were in line with spontaneous rates in many other parts of the world. For example, the rate observed during 1962-92 in England and Wales was about 0.5/million (E D Williams, personal communication).

In Belarus (population about 10 million), where the increase has been most pronounced, more than half the cases are reported from the Gomel region immediately to the north of Chernobyl (figure). Nearly all diagnoses in Belarus have been subject to international verification.



Map of area studied

In all the countries, programmes of annual medical examinations were set up shortly after the accident to screen children for thyroid disease. Examinations included palpation of the neck, ultrasound imaging, and thyroid hormone testing. Between 40% and 70% of diagnosed cases were found through this programme.

In the Ukraine (population about 52 million) the increase in cases has been most pronounced in five regions in the north of the country. The greater

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part of the country was not subjected to high levels of contamination and showed a small increase, which may be due wholly or partly to increased awareness and thus ascertainment of cases.

Finally, and much more recently, an increase in cases has been reported in the Russian Federation (population about 150 million) in the region of Bryansk (population 1.5 million) close to Gomel in Belarus. Appreciable contamination also occurred in the Kaluga region (east of Bryansk region), but only two cases have been observed despite annual medical examinations.

All the regions in the table are characterised by the heavy contamination that occurred immediately after the accident; the table shows the contamination with caesium-137. The short half lives of the isotopes of iodine made their contribution to the dose harder to assess, but the table gives estimates of the range of the dose to children living in the various regions at the time of the accident. For those who continued to live in the contaminated region and to consume locally produced milk for the three months after the accident, most (about 85%) of the dose to the thyroid derived from iodine-131, while the remainder was from short lived isotopes of iodine. For those (a minority) evacuated to "clean" regions soon after the accident the fraction of the dose from short lived isotopes was greater, although total doses would have been lower.

These observations raise important questions of a public health nature about the consequences of exposure to radioactive fallout. These questions are of immediate concern to the countries affected but also of international concern so that, in the event of future accidents, appropriate public health measures can be implemented quickly and

effectively. It is notable that in the regions most affected about 2.3 million children were resident at the time of the accident. This led to unprecedented exposure of a population to ionising radiation, which demands an international response.

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Treatment of dysfunctional uterine bleeding

Serious complications may occur after hysteroscopic procedures

EDITOR.—The low incidence of major post-operative complications after hysteroscopic procedures for dysfunctional uterine bleeding in S B Pinion and colleagues' study¹ certainly seems to suggest that there is a future for such procedures. Serious complications can, however, arise, as we recently witnessed.

An obese 44 year old woman underwent hysteroscopic diathermy ablation of the endometrium for menorrhagia. Her medical history included a right ovarian cystectomy, appendicectomy, and cholecystectomy. She did not have any concurrent gastrointestinal complaints. Four days post-operatively she developed a faecal vaginal discharge. A barium study and examination under anaesthesia showed the presence of a colouterine fistula. She underwent a laparotomy, at which,

Details of cases of childhood thyroid cancer (thyroid cancer in children aged under 15 at diagnosis) in Belarus, Ukraine, and Russia before and after accident at Chernobyl (rates are expressed as annual averages per million children under 15 in the regions and periods identified)

	1981-5		1986-90		1991-4		No of children with thyroid cancer born since 1986	Cases found by annual medical examination since 1986 (%)*	Range of contamination with caesium-137 ($\times 10^9$ Bq/km ²)	Range of estimated thyroid doses (Gy)	Cases of papillary cancer (%)	Cases confirmed by international review (%)
	No	Rate	No	Rate	No	Rate						
Belarus†	3	0.3	47	4.0	286	30.6	7	62	NA	NA	96	91
Gomel	1	0.5	21	10.5	143	96.4	5	NA	4-1700	0.15-5.7	NA	NA
Ukraine	25	0.5	60	1.1	149	3.4	2	NA	NA	NA	95	NA
Five most northerly regions‡	1	0.1	21	2.0	97	11.5	NA	40	19-56	0.05-2.0	NA	NA
Russia	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bryansk and Kaluga regions	0	0	3	1.2	20	10.0	0	NA	4-370	0.06-1.8	NA	NA

NA=Not available.

*Annual medical examination includes palpation and ultrasound scanning of neck and, in some cases, thyroid hormone tests.

†Data made available by Drs Demidchik, Astakhova, Okeanov, and Kenigsberg.

‡Kiev, Chernikov, Cherkassy, Rovno, and Zitimir.