

Re-examination of two Spanish families poisoned by PCDDs and PCDFs in contaminated cooking oil

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Introduction

We have previously reported a family of mother, father and seven children poisoned after consuming cooking oil containing PCDDs and PCDFs around 1982 in the region of Sevilla. The youngest son was exposed *in utero* (1,2). Another family of mother, father, two sons and a daughter, poisoned in a similar manner, were also discovered in about 1990. Most members of both families presented with some degree of chloracne. In 1990 the blood levels of PCDDs and PCDFs were measured. This was repeated in 1996 with the addition of urinary analysis for porphyrins and evaluation of immunological components and functions including lymphocyte surface receptors and the capacity to respond to mitogens and recall antigens.

Methods

Blood and urine samples were collected at 8-9 am. Estimations of PCDDs and PCDFs were as described previously (2,3). Urine was analysed by h.p.l.c. as reported (4). Blood for immune responses was flown to Berlin within 8 hrs of collection and analysed for particular immune competence components including lymphocyte sub-populations (5).

Results and Discussion

The distribution of PCDDs and PCDFs in the plasma lipids of the two families showed mostly highly evaluated levels of the high PCDDs especially OCDD. Lower chlorinated congeners were not greatly elevated and may have been excreted since the original exposure. The patterns were not identical in the two families, with significant quantities of 1,2,3,4,6,7,8-HpCDF being detected in the blood of family 2.

The levels of OCDD in 1990 and 1996 are shown in Table 1 and compared with the age of the subject.

Although levels in most younger members had declined over six years, in some cases due to natural growth, parents in both families showed no such trends in fact in some individuals levels had apparently significantly increased. The reasons are unclear and there were no recorded loss in weights.

Table 1. Octachlorodibenzo-p-dioxin levels in plasma (ng/g lipid)

		Age	1990 Wt kg	OCDD	Age yr	1996 Wt kg	OCDD
Family 1	F	50	100	300	56	102	660
	M	47	80	240	53	70	380
	S	20	54	210	26	60	37
	D	19	54	180	25	63	110
	D	17	56	140	23	58	130
	S	16	51	20	22	65	61
	S	12	43	28	18	68	13
	D	10	35	17	16	53	9
	S	8	22	14	13	43	3
Family 2	F	58	74	170	64	72	490
	M	55	75	190	61	73	440
	D	27	58	280	33	56	330
	S	17	83	180	23	90	180

F = father, M = mother, S = son, D = daughter

In 1996 no abnormalities in porphyrin excretion were seen in family 2 but 5 of the nine members of family 1 still showed the presence of an abnormal unknown porphyrin which was also detected in eight members in 1990.

No long-term abnormalities of immune competence compared to control subjects could be detected under the conditions employed.

References

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