

Allergic contact eczema from sodium amidotrizoate – a radiopaque substance in angiography and renography

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Radiopaque substances used for x-ray angiography may cause unwanted side effects involving the skin (Barke 1970, Fischer 1970, Kerp et al. 1970). Burckhardt (1962) recommended patch testing in members of x-ray units but gave no details of his own experience.

We have seen two cases of contact eczema due to amidotrizoates (Fig. 1) in Visotrast® preparations. In the German Democratic Republic (GDR) commercial products are Visotrast 290® and Visotrast 370®, which are 4:52 and 10:66 mixtures of sodium amidotrizoate and methylglucamine amidotrizoate in water containing 290 mg and 370 mg iodine per ml respectively.

The available literature including 15 volumes of Section XIII, *Excerpta Medica*, did not reveal any similar cases.

Case 1

A nurse, aged 32 years, who had never previously been afflicted with skin diseases acquired

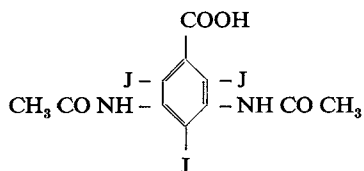


Fig. 1. 2,4,6-Triiodo-3,5-diacetyl-aminobenzoic acid. Preparations of Visotrast are mixtures of sodium amidotrizoate and methylglucamine amidotrizoate (RINN – WHO – sodium amidotrizoate). Similar registered products are Angiographin, Cardiografin, Gastrografen, Hypaque, Hypaque M, Nicopaque, Odiston, Pielograf, Radiosélectan urinaire et vasculaire, Renografin, Renovit, Thixon, Triognost, Triombrin, Urografen, Uromiro, Urotrast “Krka”, Urovist, Urovison, Urigrafub “Assia” (Barke 1970, Negwer 1971).

eczema of the hands after a 6-month period of work in an x-ray unit for angiography. She used Visotrast every day filling syringes without wearing gloves. She stopped this work and the eczema cleared up rapidly. A relapse occurred 2 days after recommencing the job. After changing her place of employment she remained free from further complaints.

She had had previous contact with formaldehyde and para-oxy-diphenylmethane.

Case 2

A female medical technician, aged 26 years, with no previous history developed eczema of the hands after 10 months' use of Visotrast in a way similar to that of Case 1. She improved during holidays and had no relapse after changing her job.

The patch test results are shown in Table 1. The patients were retested in September–October 1972 and the results are shown in Table 2. Case 1 showed unequivocal results only after skin stripping. Control tests in 25 subjects with Visotrast 290 and 370 were negative. One of 18 control tests with sodium amidotrizoate gave a weak positive. He had undergone renography several years earlier.

Discussion

The patch test reactions indicated an allergic reaction. In animal experiments no responses were obtained by intradermal/intramuscular administration of a 40 % solution of sodium amidotrizoate. When sodium amidotrizoate was tested by conjunctival application in rabbit eyes, no irritation resulted (Langecker et al. 1954). It is unlikely that the highly concentrated patch test solution was irritant. One of the controls showed a positive reaction which we considered to be an immunological scar from two contacts in the past.

Experiences drawn from the intravenous application of iodine-contrast-intensifying preparations point to the amidotrizoate as a weak

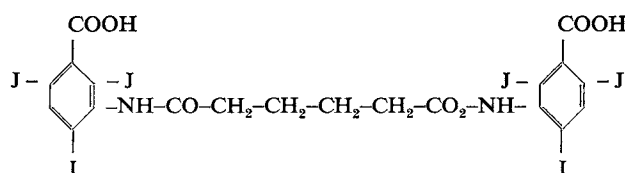


Fig. 2. bis (2,4,6-Triodo-3-carboxy-anilide) adipic acid (RINN - WHO - Adipiodone).

Table 1. Patch test results

Allergen	Case 1			Case 2		
	24h	48h	72h	24h	48h	72h
Formaldehyde (0.7 % aq.)	-	+	++	-	-	-
p-oxydiphenylmethane (1 % alc.)	-	±	++	-	-	-
Visotrast 290 (as is)	-	-	±	+	++	++
Visotrast 370 (as is)	+	++	++	NT	NT	++
Sodium amidotrizoate (25 % aq.)		NT		-	+	++

Table 2. Patch test results in September-October 1972

Allergen	Case 1			Case 2		
	24 h	48 h	72 h	24 h	48 h	72 h
Visotrast 290 (as is)	-	++*		+	+	++
Visotrast 370 (as is)	-	++*		±	+	++
Adipiodone (as is)	-	-		-	-	-
Iodine (3.5 % alc. open)	-	-	-	-	-	-
Potassium iodide (10 % pet.)	-	-	-	-	-	-
Benzoic acid (2 % aq.)	-	-	-	-	-	-
Methylglucamine (50 % aq.)	-	JR*		-	-	-
Sodium amidotrizoate (50 % aq.)	-	++*		-	+	++
Sodium amidotrizoate (25 % aq.)	-	++*		-	±	+
Sodium amidotrizoate (10 % aq.)	-	++*		-	±	++
Sodium amidotrizoate (1 % aq.)	-	+		-	-	±

* Case 1. Unambiguous reproduction of positive patch test results was obtained only after stripping the deeply suntanned skin.

allergen. Fischer (1970) states that in only 10-15 % of accidents during angiography could an allergic pathogenesis be proved. The remaining cases are explained as pharmacodynamic reactions. In the case of Visotrast we consider that the whole molecule is the allergen and not free iodine as suggested by Metzner (1971) and Egea Bueno (1971).

Our patients had negative patch tests to iodine and potassium iodide. Langecker et al. (1954) state that iodine is not split off from sodium amidotrizoate.

Cross sensitization to chemically related compounds such as adipiodone (Fig. 2) was not found. We were not able to test the patients with diaminobenzoic acid and diacetylaminobenzoic acid.

Acknowledgement

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References

- Barke, R. (1970) *Röntgenkontrastmittel*. Leipzig: VEB Georg Thieme.
- Burckhardt, W. (1962) Die beruflichen Hautkrankheiten. *Handbuch der Haut- und Geschlechtskrankheiten*. Eds. G. Miescher & H. Storck. Vol. II/1, pp. 369–474. Berlin, Göttingen, Heidelberg: Springer Verlag.
- Egea Bueno, L. (1961) Un caso de yodides tuberosas por preparados yodicos de contraste radiografico. *Actas dermosifilograficas* 52, 4, 143–148, quoted in *Excerpta Medica* 1962, Section XIII, 16, 418.
- Fischer, H. (1970) Nebenwirkungen von Röntgenkontrastmitteln. *Medizinische Klinik* 65, 501–506.
- Kerp, L., Kasemir, H., Aust, D., Zahradnik, H., Leu, P. & Weißleder, H. (1970) Intrakutane Vortestung und gezielte Prophylaxe der Nebenwirkungen von intravenös angewendeten Röntgenkontrastmitteln. *Deutsche medizinische Wochenschrift* 95, 197–204.
- Langecker, H., Harwardt, A. & Junkmann, K. (1954) 3,5-Diacetylamino-2,4,6-trijodbenzoesäure als Röntgenkontrastmittel. *Archiv für experimentelle Pathologie und Pharmakologie* 222, 584–590.
- Metzner, H. H. (1971) Berufsbedingte Dermatosen bei medizinischem Personal. *Zeitschrift für ärztliche Fortbildung* 65, 825–830.
- Negwer, M. (1971) *Organisch-chemische Arzneimittel und ihre Synonyma*. 4th ed, Vol. I, p. 216. Berlin: Akademie Verlag.

Primula dermatitis

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The view that *Primula obconica* is now a rare cause of non-occupational dermatitis in Europe because florists are reluctant to stock the plant (Roed-Petersen & Hjorth 1976) may be true only regionally.

Thus, a major specialist firm supplying flower seeds for the horticultural trade (Colegrave Seeds Ltd., Banbury, Oxford, England) find that their sales of *P. obconica* seed have shown no decline in recent years and they conclude that the growers must retain a ready market for the plant. Furthermore, enquiries in the seed trade and through the Flowers Publicity Council (Hay 1977) indicate no sign

of decreasing demand for seed or reduction in the supplies of plants through the market.

We have seen several new cases of contact hypersensitivity to *P. obconica* already this year and know of others and we suggest that, in the U.K. at least, this plant should retain its notoriety as a common as well as a most virulent sensitizer.

References

- Hay, R. (1977) Personal communication.
- Roed-Petersen, J. & Hjorth, N. (1976) Compositae sensitivity among patients with contact dermatitis. *Contact Dermatitis* 2, 271.