from all over Britain) the design of the trial was based on that used by Hodgson *et al.*² During the study, all patients having an abortion at one Advisory Service nursing home (other than those having simultaneous sterilisation) were given, under direct nursing supervision, either five 100 mg doxycycline capsules or five placebo capsules, two periods of placebo administration alternating with two similar periods of doxycycline. The nurses did not know the contents of the capsules.

Patients were given leaflets explaining the nature of the trial and prepaid forms on which to report any complications, especially infection. They were also given a 24-hour telephone number for the same purpose. While it was not expected that reporting would be complete, there was no reason to suppose that the rate of reporting would differ significantly among the four periods.

A total of 1519 patients were given doxycycline and 1431 placebo. In the placebo group, there were eight reported cases that seemed to include pelvic infection, compared with only one in the doxycycline group. This difference was significant at a confidence level of over 95% (table; $\chi^2=4.37$ using Yates's correction factor).

Reported cases of pelvic infection in women having an abortion and given placebo or doxycycline after operation

Case No	Hospital admission	Abortion-infection interval (days)	Clinical details	Weeks pregnant at abortion
<i>Placebo group (n = 1431)</i>				
1	Yes	2	Further curettage	12
2	No	16		9
3	Yes	2		8
4	No	Not known		9
5	Yes	4	Further curettage	8
6	Yes	5	Salpingitis; four weeks off work	10
7	No	3		14
8	Yes	5	Salpingitis	10
<i>Doxycycline group (n = 1519)</i>				
9	No	21		8

Comment

Doxycycline 500 mg considerably reduced the incidence of infection after abortion. I suggest that this was chiefly because single-dose supervised administration virtually eliminated the problems of compliance and poor absorption. These results support the findings of Hodgson *et al.*² and are significant. The greater difference between the placebo and antibiotic groups in my study compared with that in the results of Hodgson *et al.* may reflect the necessarily inferior and fluctuating blood concentrations to be expected of their four-day, six-hourly unsupervised courses of tetracycline.

Although nausea is a recognised side effect of doxycycline (and other antibiotics) especially at high dosage, it was rarely seen and hardly ever led to vomiting. Single-dose supervised administration requires no more nursing time than giving patients a supply of antibiotics to take with them, and the resultant savings on the cost of treating pelvic infections would probably exceed the cost of the antibiotic.⁴ The benefits of avoiding infertility after abortion are difficult to quantify but must justify routine use of this prophylactic treatment, which should probably be adopted without delay pending further studies. The treatment may also be suitable for prophylaxis in other operations.

I thank the nursing and medical staff of the British Pregnancy Advisory Service for their enthusiastic co-operation, and Dr L McKay, Pfizer Ltd, for generously supplying Vibramycin and placebo capsules.

The views expressed in this paper do not necessarily represent those of the trustees of the British Pregnancy Advisory Service.

¹ Blaxall MO, *et al.* *Legalised abortion and the public health*. Washington: Institute of Medicine; National Academy of Sciences, 1975.

² Hodgson JE, *et al.* Prophylactic use of tetracycline for first trimester abortions. *Obstet Gynecol* 1975;45:574-8.

³ Adadevoh BK, *et al.* Serum levels of doxycycline in normal subjects after a single oral dose. *Br Med J* 1975;i:880.

⁴ Swartz WH. Prophylaxis of minor febrile and major infectious morbidity following hysterectomy. *Obstet Gynecol* 1979;54:284-8.

(Accepted 7 July 1980)

British Pregnancy Advisory Service, Wootton Wawen, West Midlands B95 6DA

COLIN BREWER, MRCS, MRCPsych, research fellow

Deaths from rhesus haemolytic disease in England and Wales in 1978: accuracy of records and assessment of anti-D prophylaxis

In this report we analyse the deaths from rhesus haemolytic disease of the newborn during 1978 in England and Wales; the methods used are similar to those used in our previous study.¹

Methods and results

The data for 1978 were kindly provided by Dr J A C Weatherall, of the Office of Population Censuses and Surveys. She sent us death certificates of 38 babies born alive and 86 stillbirths. These form,² or will form, the official statistics for 1978. In addition she sent us the certificates derived from "multiple coding"³ of two liveborn babies with the disease (making a total of 40) and 16 stillbirths (making a total of 102), although multiple-coded cases do not appear in the official statistics. We then obtained from the doctors in charge of the patients either the complete notes or very full abstracts, from which we made our final assessment. Except for the multiple-coded cases, all certificates were coded as 774 or 775 and their subunits. These codes were taken from the 8th revision of the *International Classification of Diseases (ICD)*,³ the 9th revision having come into use only on 1 January 1979. Code 774 refers to haemolytic disease of the newborn with kernicterus, and code 775 to the same disorder without mention of kernicterus.

As before,¹ our aims were to evaluate the accuracy of the death certificates, to find out the circumstances in which the mothers had become immunised, and to assess the efficiency of anti-D prophylaxis. The table shows the two years compared, with the rhesus deaths divided into eight categories. Occasionally difficulties of categorisation arose and the assignment then made was the most probable one. Category 3 was the most problematical,⁴ and here we included only those mothers in whom the evidence pointed to primary immunisation in their first full-term pregnancy. These mothers specifically had no history of abortions, anti-D was found in only the last few weeks, and the infant was only mildly or not at all affected. Category 3 is important as being relevant to whether or not antenatal anti-D prophylaxis should be introduced.

Analysis of death certificates and case notes sent to us

Category No	Category	1977		1978	
		Live-born infants	Stillbirths	Live-born infants	Stillbirths
1	Immunised after term deliveries before anti-D available	12	37	10	28
2	Immunised by abortion before anti-D available after abortions	3	1	1	1
3	Immunised during pregnancy: Before 28th week	0	0	0	1
	After 28th week	6*	6*	2	8
4	Immunised by Rh antigens $\bar{e}$ or E, or both (mother D positive and therefore no prophylactic anti-D given)	1	3	1†	2†
5	Immunised despite anti-D prophylaxis (failures)	2	7	3‡	4‡
6	Immunised and no record of anti-D having been given when indicated	16	16	9	19
7	Immunised by blood transfusion	0	0	0	2
8	Uncodable for category (notes lost) but information denoted rhesus death	0	0	0	2
Total No of rhesus deaths		40	70	26	67
Total No of non-rhesus deaths§		14	31	14	35
Grand total		54	101	40	102

*These figures are the ones given in our first report.¹ They were subsequently revised⁴ and four mothers were reallocated to other groups (three to category 6 and one to category 1).

†These cases were also immunised against Kell.

‡The mother of one of these babies was also included in the 1977 study.

§The main category of non-rhesus deaths consists of babies with hydrops due to causes other than rhesus haemolytic disease of the newborn but for whom the coding is incorrect. In 1977, 11 of the 14 non-rhesus deaths of liveborn infants were of this type, as were 13 of the 31 stillbirths. In 1978 the figures were nine out of 14 for liveborn infants and 23 out of 35 for stillbirths. The other non-rhesus deaths were due to miscellaneous causes, but in only one case was the death certainly the result of a haemolytic condition other than rhesus (the haemolytic uraemia syndrome). There was also one doubtful case due to ABO incompatibility.

Official statistics of the Office of Population Censuses and Surveys—As in 1977¹ the official figures of the Office of Population Censuses and Surveys are inflated by the inclusion of many non-rhesus deaths. On the other hand, they do not include rhesus deaths obtained by multiple coding. In the table only a 25% sample of the multiple-coded cases is included, so that both rhesus and non-rhesus deaths are underestimated. Of the 1978 liveborn babies, the two multiple-coded cases were both rhesus deaths, and of the stillbirths, four of the 16 were rhesus and the remaining 12 non-rhesus deaths.

Comment

Deaths from rhesus haemolytic disease of the newborn have been declining for many years, but since the introduction of anti-D the fall has been much steeper.⁵

It is not possible to draw definite conclusions from data based on only two years, but trends that would be expected if the prophylaxis was successful (assuming treatment of rhesus haemolytic disease of the newborn remains substantially unchanged) may be assessed.

Given the natural history of worsening of the disease in consecutive babies, the reduction in deaths is more likely to be seen initially in the liveborn babies. This is because mothers of stillborn babies will usually have been immunised for longer than mothers of liveborn babies—and many of them will still be in categories 1 and 2. On the other hand, the numbers in categories 3 and 4 should remain approximately constant since in neither group is prophylactic anti-D administered. Category 5 (failures) would probably be unaltered, but the number in category 6 should decrease perhaps first in the liveborn babies. In the non-rhesus cases there would be little change, since our earlier report could not yet have made an impact and the 8th revision of the ICD³ was still in use. The table supports some of these predictions, particularly of the reduction in the number of deaths of liveborn babies in Category 6 and the similarities in non-rhesus cases.

We hope that the impact of our three reports, together with the introduction of the 9th revision of the ICD, which revised the hydrops coding, will result in both more accurate statistics and more efficient anti-D prophylaxis.

We are most grateful to Dr J A C Weatherall, Professor P L Mollison, Professor E D Acheson, and Dr G N Smith for their helpful comments.

¹ Clarke CA, Whitfield AGW. Deaths from rhesus haemolytic disease in England and Wales in 1977: accuracy of records and assessment of anti-D prophylaxis. *Br Med J* 1979;i:1665-9.

² Office of Population Censuses and Surveys. *Mortality statistics: cause 1978. England and Wales*. London: HMSO, 1980.

³ World Health Organisation. *International Classification of Diseases. 8th revision, 1965*. Vol 1. Geneva: World Health Organisation, 1967.

⁴ Clarke CA, Whitfield AGW. Rhesus immunisation during pregnancy: the case for antenatal anti-D. *Br Med J* 1980;280:903-4.

⁵ Clarke CA. *Nature the old nurse. The Harveian oration of 1979*. London: Royal College of Physicians of London, 1980.

(Accepted 4 July 1980)

**Medical Services Study Group of the Royal College of Physicians,
126 Albert Street, London NW1 7NF**

SIR CYRIL CLARKE, FRS, MD, FRCP, director
A G W WHITFIELD, MD, FRCP, assistant director

Pain in the thenar eminence: a rare case of atypical angina

We report a case of atypical angina in which there was exercise-induced pain in the thenar eminence without any precordial symptoms or other presentation of cardiac pain.

Case report

A 64-year-old woman had had pain in the left thenar eminence since 1972. She had had no pain in the thumb or any other part of the hand, arm, or chest and it was strictly related to exertion. Referred to a neurologist in 1972, the patient underwent myelography, and in 1973 a rheumatologist performed electromyography; both results were normal. In 1975 she consulted an osteopath and finally visited four separate acupuncturists (in 1976 and 1977), who could not relieve her symptoms. By 1978, the pain was occurring on slight exertion and also spontaneously at night. The relation of the pain to exertion finally brought her under our care.

During a computer-assisted graded treadmill exercise test she developed pain in the left thenar eminence accompanied by notable ST segment depression in bipolar monitoring leads within 2.5 minutes. Continuous 24-hour ambulatory ST segment monitoring was performed using a frequency modulated tape recorder.¹ During this time she had 11 episodes of pain in the thenar eminence and each was associated with ST segment depression (figure). Thallium-201 scintigraphy showed normal perfusion at rest and multiple areas of relative hypoperfusion in the inferoposterior and anterior regions after exercise. Left ventricular and coronary angiography showed inferior wall akinesia and severe triple-vessel disease.

Treatment with propranolol 80 mg three times daily produced some improvement, but she continued to have spontaneous attacks of pain. Verapamil 120 mg three times daily produced further improvement, but she continued to have pain while resting so a bypass graft was considered. The patient refused surgery, and the dose of verapamil was increased to 120 mg four times daily. Over the next month her symptoms resolved, with an increase in treadmill exercise time to 5.2 minutes and only one episode of notable ST depression in 24 hours of continuous monitoring.

ST segment and heart rate trends from continuous ambulatory electrocardiogram monitoring. Arrows show time of attacks of pain in the thenar eminence.

Comment

Since Heberden's first description of angina pectoris, many comprehensive accounts of the syndrome have been published.²⁻⁴ Cardiac pain is transmitted via the visceral afferent fibres of the sympathetic nervous system which enter the spinal cord via the white rami communicantes and the dorsal roots from T1 to T4.⁵

Despite general agreement among anatomists regarding the autonomic nervous connections of the heart, however, cardiac pain is notoriously variable.³ The radial side of the hand and the thumb is supplied by the C6 dermatome, which seems to be rarely affected. One out of 150 cases reported by Sampson³ and one out of 160 cases reported by McKenzie² were of precordial pain which radiated to the thumb. Anginal pain may also radiate to a site of past injury,⁴ but there was no history of trauma in this patient.

This patient had a rare atypical presentation of cardiac pain which led to considerable diagnostic difficulties. The absolute localisation of pain to the left thenar eminence together with the absence of any pain or discomfort in the chest during exertion or at rest seems to be a rare presentation of classical coronary artery disease which has not been described.

¹ Balasubramanian V, Raftery EB, Lahiri A, Kaye I, Stott FD. Ambulatory ST segment monitoring: problems, pitfalls and solutions. *Br Heart J* 1979;42:231.

² McKenzie J. *Angina pectoris*. London: H Frowd and Hodder and Stoughton, 1923:31. (Oxford medical publications.)

³ Sampson JJ, Cheitlin MD. Pathophysiology and differential diagnosis of cardiac pain. *Prog Cardiovasc Dis* 1971;23:507-31.

⁴ Briggs JF. Atypical angina pectoris. In: Resseck HI, Zohman BL, eds. *Coronary heart disease*. Philadelphia: J B Lippincott, 1971:215-8.

⁵ White JC, Smithwick RH, Simeone FA. In: *The autonomic nervous system; anatomy, physiology and surgical application*. New York: MacMillan, 1952.

(Accepted 15 July 1980)

**Department of Cardiology and Division of Clinical Sciences,
Northwick Park Hospital and Clinical Research Centre, Harrow,
Middlesex HA1 3UJ**

A LAHIRI, MB, BS, research fellow

V BALA SUBRAMANIAN, MD, FACC, consultant clinical physiologist

M W MILLAR CRAIG, MRCP, registrar

E B RAFTERY, BSC, FRCP, consultant cardiologist

Correction

Alcohol and the emergency service patient

An error occurred in this paper by Dr S Holt and others (6 September p 638). The third sentence of the Summary should have read "Clinical assessment of intoxication resulted in a false-negative diagnosis in 19% of inebriated patients. . ."