Incidence of major complications of neurolytic coeliac plexus block

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Summary

The number of neurolytic coeliac plexus blocks carried out in England and Wales over a 5 year period (1986-1990) was ascertained. The number of cases of the major complications of permanent paraplegia and/or loss of anal and bladder sphincter function following on from such blocks, over the same period of time, was also ascertained. The information was obtained by means of a questionnaire which was sent to most of the pain clinics in England and Wales. There were 2730 neurolytic blocks carried out over the 5 year period. The number of cases of permanent paraplegia following on from the blocks was four. Of these four cases, three of them also had loss of anal and bladder sphincter function - loss of sphincter function never occurred in isolation. The incidence of major complications following neurolytic coeliac plexus block was thus one case per 683 blocks.

Introduction

Upper abdominal pain caused by cancer or by chronic pancreatitis can be treated using a neurolytic coeliac plexus block. The efficacy of the block in cancer pain therapy is generally thought to be very good; in the treatment of pain due to chronic pancreatitis, however, its efficacy is less certain.

Unfortunately, neurolytic coeliac plexus block is associated with several complications - some minor, some major. The complications include: pain at the site of injection along with transient backache, postural hypotension, haematuria from damage to the kidney, pneumothorax, increased gut motility, impotence. The most serious of the complications are permanent paraplegia and loss of anal and bladder sphincter function.

Reports of the occurrence of permanent paraplegia and of loss of anal and bladder sphincter function following on from the block have appeared sporadically in the world literature (summarized in Table 1). It is impossible, however, to obtain from these reports the actual incidence of these complications, and it is information on incidence that is required by the clinician planning effective pain therapy. Accordingly, in order to obtain information on the incidence of the complications, an investigation has been conducted which attempts to correlate the number of cases of permanent paraplegia and of loss of anal and bladder sphincter function arising as complications of neurolytic coeliac plexus block, with the number of such blocks involved in producing them.

The investigation

The approximate number of neurolytic coeliac plexus blocks undertaken in England and Wales over a recent 5 year period (1986-1990) was ascertained. Over the same period of time the number of cases of permanent paraplegia and the number of cases of loss of anal and bladder sphincter function associated with the above blocks were ascertained. The information was obtained from questionnaires sent to most of the pain clinics in England and Wales listed in the *Intractable Pain Society (1990/91) Directory*. (Clinics where coeliac plexus blocks would not be carried out - such as Orthopaedic or Dental Pain Clinics - were not circularized. Where the same medical personnel were common to two or more Clinics, then only one of the Clinics was circularized.)

The questionnaire was, intentionally, kept very brief and to the point in order to encourage a high return rate. Two principle questions were asked: first, approximately how many neurolytic coeliac plexus blocks had been undertaken at the particular Clinic during the relevant 5 year period; secondly, had any of the complications of permanent paraplegia and/or loss of anal and bladder sphincter function been encountered during the same period. If such complications had been encountered then details of the case histories were requested and the following further questions were asked: had radiographic screening (with the use of contrast material) been utilized during the procedure; what was the neurolytic agent used and what was its concentration.

In addition to the questionnaires sent to the pain clinics, to act as a check, the three medical defence

Table 1. Major complications of neurolytic coeliac plexus block described in the literature

Source	*Year*	*Indication*	*Paraplegia*	*Loss of sphincter function*	*Neurolytic agent and concentration*
Ref 1	1974	Cancer	Yes	Yes	Phenol 6%
Ref 2	1983	Chronic pancreatitis	Monoplegia only	Yes	Alcohol 75%
Ref 3	1984	Cancer	Yes	?	Alcohol 100%
Ref 4*	1989	Cancer	Yes	Yes	Alcohol 90%
Ref 5	1991	Cancer	Yes	No	Alcohol 48%

*Case contained in present investigation

Table 2. Numbers of neurolytic coeliac plexus blocks carried out by clinics in England and Wales during 5 year period 1986-90. Results from 219 questionnaires

	No reply received	All replies: Number of blocks carried out over 5 years at each clinic				
		Nil	1-10	11-20	21-50	51-200
Number of pain clinics	59	16	88	24	20	12

organizations in Britain (ie Medical Defence Union, Medical Protection Society, Medical and Dental Defence Union of Scotland) were asked whether any cases of permanent paraplegia or any cases of loss of anal and bladder sphincter function following neurolytic coeliac plexus block had been reported to them. If such cases had been reported to them then brief details of the case histories were requested.

Results

The number of questionnaires sent out to pain clinics in England and Wales was 219. The number of these that were returned, duly completed, was 160. This represents a return rate of 73%.

The total number of neurolytic coeliac plexus blocks reported to have been carried out in the 160 clinics in the 5 years (1986-1990) was 2730. Of these 160 clinics: 16 did not carry out any such blocks; 88 carried out from one to 10 blocks; 24 carried out from 11 to 20 blocks; 20 carried out from 21 to 50 blocks; 12 carried out from 51 to 200 blocks. (Two in the latter group returned a figure of 200 each. The results are summarized in Table 2.)

Reports of cases with the complications of permanent paraplegia and/or loss of anal and bladder sphincter function totalled four in number. All of them had permanent paraplegia while three of the four had loss of anal and bladder sphincter function as well. There were no cases of loss of sphincter function not associated with permanent paraplegia.

The above four reports of major complications were all returned via the questionnaires. (One of these cases had also previously been published in the medical literature.) The medical defence organizations were cognizant of two of the four cases; they had no knowledge of any other cases. They supplied useful additional clinical details in respect of the two cases they knew about.

The incidence of permanent paraplegia following neurolytic coeliac plexus block thus appeared to be four cases per 2730 blocks (that is approximately one per 683 blocks). Loss of anal and bladder sphincter function which occurred in three of the above four cases (and never in isolation) appeared to have an incidence of three cases per 2730 blocks (that is one per 910 blocks).

The reason for carrying out the neurolytic blocks in the above four cases with major complications, was specified in three of them. One was for cancer (carcinomatosis with liver metastasis), the other two were for chronic pancreatitis.

Radiographic screening with the use of contrast material was described in all the four cases with major complications. The neurolytic agent used in all four cases was alcohol: in one the strength was 50%, in the other three the strength was greater than 50%. (Details of the four cases with major complications are summarized in Table 3).

Discussion

The figures obtained for the number of coeliac plexus blocks carried out over the 5 year period and for the number of major complications associated with them, might well not be completely accurate as the questionnaire return rate was only 73%. However, the discrepancy between the 'obtained' numbers and the 'actual' numbers might not be very great as it is probable that the clinics that did not carry out neurolytic blocks would be less likely to reply to the questionnaire than would the clinics that did carry them out. None the less there is perhaps a slight possibility that a case with major complications could have been missed.

The amount of information asked for in the questionnaire was intentionally limited in order to encourage a high return rate - a very necessary requirement for an investigation primarily designed to find out the actual incidence of the complications. It is, therefore, not possible to draw many significant conclusions about causal factors.

Permanent paraplegia and loss of anal and bladder sphincter function appeared together in three of the four cases. This association obviously points to a common factor for both types of complication. The common factor must be damage to the spinal cord by the neurolytic agent.

Damage to the spinal cord by neurolytic agent could be by direct or by indirect means. The agent could

Table 3. Cases of permanent paraplegia and/or loss of anal and bladder sphincter function in the investigation (5 year period 1986-1990)

Case	Sex/ age	Indication	Paraplegia	Loss of sphincter function	Radiological control	Neurolytic agent and concentration	Other details
A	F/61	Chronic pancreatitis	Yes	?	Yes	Alcohol 66%	Seven previous coeliac plexus blocks
B	?/?	?	Yes	Yes	Yes	Alcohol 50%	Under general anaesthetic Pt. moved with injection
C	F/62*	Cancer	Yes	Yes	Yes	Alcohol 90%	Under sedation
D	M/55	Chronic pancreatitis	Yes	Yes	Yes	Alcohol 100%	Under general anaesthetic

*This case had previously been published in literature[4]

gain entry to the cerebrospinal fluid as a result of dural puncture or as a result of seepage from outside the dura. The agent could enter the spinal cord as a result of its injection into a feeder artery to the cord. Alternatively the neurological damage could result from spasm or thrombosis in a major feeder artery due to the presence of the agent external to the vessel.

In the cases described it is unlikely that dural puncture occurred in any of them as radiographic screening (with contrast material) was undertaken in all the cases. The direct injection of neurolytic agent into the cerebrospinal fluid must therefore be ruled out as being a causal factor.

The neurolytic agent used in all the four cases of complications was alcohol and in three of these the concentration was greater than 50%. This generally high concentration may be of some significance (Leung *et al.*[2] have given figures suggesting that an alochol concentration greater than 50% might favour the development of neurological complications in this type of neurolytic block).

A major complication incidence of one per 683 neurolytic blocks might not be regarded as excessive in the situation of cancer pain therapy where the effectiveness of the block is likely to be good and where the patients remaining life span may well be short. In these cases the neurolytic block could be used at an early stage when it is likely to be more effective.

In the case, however, of chronic pancreatitis, where the effectiveness of the block may be slight and short-lived and where patient survival may be long, the situation is rather different. In this condition the block may have to be repeated many times thus increasing the likelihood of the patient having a major complication (seven repeated blocks will present a 1% chance of this). Certainly in chronic pancreatitis it would seem prudent to try all other reasonable lines of therapy (including opiate therapy using a realistic dose of agent) before contemplating a neurolytic coeliac plexus block.

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Forthcoming events

Neural Tube Defects
21 May 1993, London
Further details from: Mrs J Steward, The Wellcome Trust, 183 Euston Road, London NW1 2BE (Tel: 071-611 8656; Fax: 071-611 8545)

Russian/American Conference on Emergency Medical Care
4 June 1993, Moscow, Russia
Further details from: SIAEMC, Box 179, Millersville, MD 21108, USA (Tel/Fax: (410) 987-5616)

MRCP Part II Course
5-11 June 1993, London
Further details from: Dr D Geraint James, Royal Free Hospital, Pond Street, Hampstead, London NW3 2QG (Tel: 071-794 0500, ext 3931)

Preparing for a Clinical Audit: Experience with the FDA
8-10 June 1993, London
Further details from: (see entry for 18-22 January 1993)

Imaging in Gynaecology
9 June 1993, London, UK
Further details from: Royal College of Obstetricians & Gynaecologists, 27 Sussex Place, Regent's Park, London NW1 4RG (Tel: 071 262 5425 ext 207)

8th Spinal Update Symposium
9-11 June 1993, Oswestry
Further details from: Erica Wilkinson, Symposium Secretary, Institute of Orthopaedics, Robert Jones & Agnes Hunt Orthopaedic & District Hospital, Oswestry SY10 7AG (Tel: 0691 655311)

Diagnostic & Therapeutic Fetal Intervention
10 June 1993, London, UK
Further details from: (see entry for 9 June 1993)

9th Annual Drug Law Symposium
11 June 1993, London
Further details from: Ms C Jackson, IBC Technical Services, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD (Tel: 071-637 4383; Fax: 071 631 3214)

Pharmacological Approaches to the Treatment of Chronic Pain: Current Concepts and Critical Issues
12-14 June 1993, Monterey, California
Further details from: Extended Programs in Medical Education, University of California, Room LS-105, San Francisco, CA 94143-0742, USA (Tel: 415 476 4251)

Audit in Obstetrics & Gynaecology
15 June 1993, London, UK
Further details from: (see entry for 9 June 1993)

Developing Clinical Directorates
18 June 1993, London, UK
Further details from: (see entry for 9 June 1993)

Treating Myofacial Pain
18-20 June 1993, Cambridge
Further details from: Dr J Tanner, PMRF, c/o Wessex Rehabilitation Association, Odstock Hospital, Salisbury, Wiltshire SP2 8BJ (Tel: 0722 336 262; Fax: 0722 339 104)

6th International Conference on Behçet's Disease
30 June-1 July 1993, Paris, France
Further details from: Betrand Wechsler MD, Pitié-Salpêtière Hôpital, 47/83 Bd de L'Hôpital, 75013 Paris Cedex 13, France Tel: 45 70 26 67; Fax: 45 70 20 53)

Royal Society of Tropical Medicine and Hygiene Conference
5-7 July 1993, Royal College of Physicians of Edinburgh
Further details from: Administrator, Royal Society of Tropical Medicine and Hygiene, Manson House, 26 Portland Place, London W1N 4EY (Tel: 071 580 2127; Fax: 071 436 1389)

1st International & 8th European Conference on Clinical Hemorheology
5-8 July 1993, Vienna, Austria
Further details from: Prof DDr E Ernst, Dept Phys Med Rehab, University of Vienna, AKH Währinger Gürtel 18-20, 1097 Vienna, Austria (Tel: 40400 4330; Fax: 40400 5281)

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