

Randomised study of long term outcome after epidural versus non-epidural analgesia during labour

Charlotte J Howell, Tracy Dean, Linda Lucking, Krysia Dziedzic, Peter W Jones, Richard B Johanson



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Abstract

Objective To determine whether epidural analgesia during labour is associated with long term backache.

Design Follow up after randomised controlled trial.

Analysis by intention to treat.

Setting Department of obstetrics and gynaecology at one NHS trust.

Participants 369 women: 184 randomised to epidural group (treatment as allocated received by 123) and 185 randomised to non-epidural group (treatment as allocated received by 133). In the follow up study 151 women were from the epidural group and 155 from the non-epidural group.

Main outcome measures Self reported low back pain, disability, and limitation of movement assessed through one to one interviews with physiotherapist, questionnaire on back pain and disability, physical measurements of spinal mobility.

Results There were no significant differences between groups in demographic details or other key characteristics. The mean time interval from delivery to interview was 26 months. There were no significant differences in the onset or duration of low back pain, with nearly a third of women in each group reporting pain in the week before interview. There were no differences in self reported measures of disability in activities of daily living and no significant differences in measurements of spinal mobility.

Conclusions After childbirth there are no differences in the incidence of long term low back pain, disability, or movement restriction between women who receive epidural pain relief and women who receive other forms of pain relief.

Introduction

Epidural analgesia in labour is used by about 100 000 women in Britain each year.¹ However, not much is known on long term effects of this form of pain relief, and before this study anecdotal reports or case series had concentrated on more severe side effects, such as extremely rare neurological complications.² There have been several studies into back pain and epidural analgesia which have produced inconsistent results (details available on bmj.com).

Given the great human, medical, and economic costs of chronic low back pain³ we considered that a prospective controlled study with objective assessment

of long term outcome was urgently needed. We had already undertaken a randomised controlled trial of epidural and non-epidural analgesia in labour, in which we examined the immediate effects of the different forms of analgesia on progress of labour, satisfaction, and health after childbirth.⁴ We used the same general health questionnaire as MacArthur et al,⁵ which incorporated questions on low back pain. However, this did not allow an objective assessment of any back pain in terms of severity or the interference with mobility and activities of daily living.

We investigated long term differences in self reported and objective measures of low back pain between women who received epidural pain relief and those who received other forms of pain relief during labour.

Methods

Participants

For the original pain relief study we had recruited 369 primigravidas with a cephalic presentation at term. All these women were invited to participate in this follow up study (151 from the epidural group and 155 from the non-epidural group agreed to participate). In the original study 184 women were randomised to receive an epidural and 123 received it, and 185 were randomised to other methods of pain relief but 52 had an epidural (figure).

Procedures

Assessment of low back pain is complex as it involves the patient's personal and subjective experience of pain and disability as well as objective assessment of physical impairment.³ We used the Roland and Morris questionnaire, which has been validated for assessing disability in activities of daily living due to low back pain.⁶

We chose objective physical measurements that had previously been shown to identify those patients with low back pain and that were significantly associated with self reported disability in activities of daily living.⁷ We contacted women who had taken part in the pain relief study and had given birth over 12 months previously. When a woman did not want to participate in a face-to-face interview we used a telephone interview or a postal questionnaire.

Academic Department of Obstetrics and Gynaecology, North Staffordshire Hospital (NHS) Trust, Stoke on Trent, Staffordshire ST4 6QG

Charlotte J Howell
consultant anaesthetist

Linda Lucking
research coordinator

Richard B Johanson
professor of obstetrics

Physiotherapy Department, Staffordshire Rheumatology Centre, Haywood Hospital, Burslem, Stoke on Trent

Tracy Dean
research physiotherapist

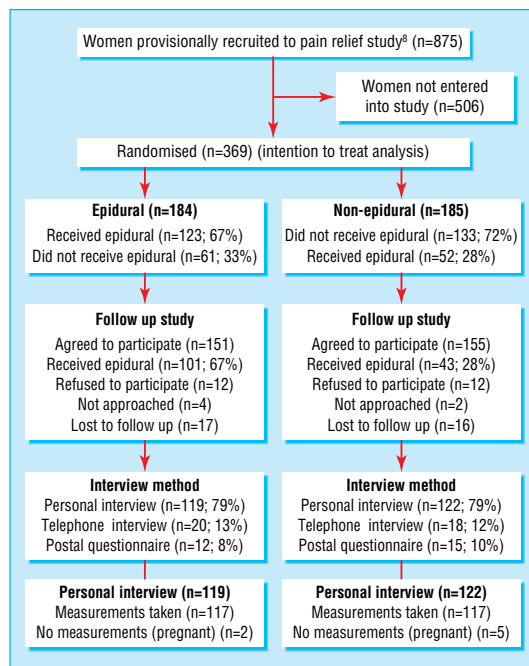
Department of Physiotherapy Studies and Primary Care Sciences Research Centre, Keele University, Keele, Staffordshire
Krysia Dziedzic
clinical trialist, physiotherapy

Department of Mathematics, Keele University, Keele, Staffordshire ST5 5BG

Peter W Jones
professor of medical statistics

Correspondence to: C J Howell
charlotte@kogs.freemove.co.uk

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Flow chart showing entry into follow up study

Results

Table 1 shows basic data for the two groups. These data reflect the validity of the original randomisation. The mean time since delivery of the index pregnancy was over two years in both groups.

The incidence of self reported low back pain during or after pregnancy was high (table 2). There were no significant differences in terms of the timing of onset. Back pain was common in both groups and more women reported severe pain in the epidural group, but pain lasting more than one year, persistent pain, and recent pain were all more common among women who had not had an epidural.

We measured a range of movements in 117 of 119 women in the epidural group who were interviewed and 117 of 122 in the non-epidural group. There were no significant differences between the groups in any of the measurements of mobility. There were also no differences in responses to questions about everyday tasks that may be more difficult in the presence of low back pain.

Discussion

In this controlled comparison of the long term effects of epidural and non-epidural analgesia we found no significant differences in self reported low back pain or

Table 2 Women's answers to pain questionnaire according to allocation to epidural analgesia or other method of pain relief during labour. Figures are numbers of women

	Epidural (n=151)	Non-epidural (n=155)
Experienced back pain	115	112
Pain began during pregnancy	87	83
Pain began after delivery (time):		
Shortly after	14	12
1-2 months	2	1
2-4 months	4	2
6-12 months	0	1
12-18 months	0	1
18-24 months	0	1
>2 years	1	0
Some other time	7	11
Pain lasted >1 year	47	64
Still experiencing pain now	64	70
Pain in past week	46	47
Last episode of pain:		
Very bad/unbearable	17	13
Moderate/quite bad	67	67
Little pain	30	25
No reply	1	7
Most common site of pain:		
Lumbar/upper sacral region	90	76
Multiple areas	19	20
Other areas	4	11
Site not specified	2	5
Pain alters during menstruation	26	25

disability and in objective measurements of spinal mobility after more than two years. The validity of these findings is affirmed by the randomised study design, the objective measures of outcome, and the high follow up rate.

Limitations

The interpretation of our findings is limited by the number of crossovers between groups. This is inevitable in trials that compare epidural and non-epidural pain relief⁸ but was lower in our study than in others. This study could therefore be considered as showing the differences between liberal and restricted use of epidural analgesia in labour. The absolute difference in epidural use was 40%. Despite the real life crossover between groups we found a significant association between use of epidural analgesia and the rate of assisted delivery, being 30% compared with 19% in the non-epidural group.⁴ If an increased incidence of low back pain was also attributable to the use of epidurals, it too could have been shown despite the crossover.

Our analysis was on an intention to treat basis for valid scientific reasons⁹ and also because this is the standpoint from which women will approach labour. They may be intending to use particular forms of analgesia, but in the real world some women may find non-epidural methods insufficient or may be managing so well that they do not use the epidural that they planned. The findings are also limited by the moderate numbers of women included, meaning that rare events of harm could not have been reliably detected.

Previous studies

MacArthur and coworkers reviewed six comparative studies that examined the association between epidural analgesia and postpartum low back pain.¹⁰ The three studies that showed a significant effect were all

Table 1 Comparability of women allocated to receive epidural analgesia or other form of pain relief during labour. Figures are means (SD) unless stated otherwise

	Epidural (n=151)	Non-epidural (n=155)
Maternal age (years)	24.4 (5.1)	23.5 (4.7)
No (%) with subsequent pregnancy	36 (24)	35 (23)
Time since delivery of index pregnancy (months)	26.6 (12.5, range 11-62)	25.9 (12.1, range 12-62)
Gestation at delivery (weeks)	40 (1.6)	40 (1.5)
Birth weight (g)	3440 (385)	3429 (490.9)
No (%) with spontaneous labour	125 (83)	122 (79)

retrospective, while the prospective surveys showed no significant differences.^{11 12} This important difference in findings illustrates the potential for bias in retrospective studies and similarly supports the value of carefully designed prospective studies, even if it is not feasible to generate a randomised cohort of patients.

Back pain in pregnancy

We found that reported rates of low back pain were high during pregnancy and at long term follow up in both groups of women. The proportions were similar to those observed by Ostgaard and Andersson in their prospective study of 817 women during pregnancy who were followed up for 12 months or more after delivery.¹³ They found that more than 67% of women experienced low back pain directly after delivery and 37% at the later follow up examination. Factors associated with persistent pain were the presence of low back pain before or during pregnancy, physically heavy work, and multiple pregnancy. This figure is somewhat higher than the overall prevalence of low back pain in women in developed countries.¹⁰ It is also significantly higher than the prevalence found in men, which supports the view that pregnancy may influence the development (or course) of low back pain.¹³⁻¹⁵

This paper is dedicated to Richard Johanson, who died a few months before publication. Dr G Waddell gave advice on methodology. We are grateful to all the women who participated.

Contributors: See bmj.com

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What is already known on this topic

Previous research has suggested an association between epidural analgesia during labour and low back pain

It is not known whether this association is causal

What this study adds

This long term follow up study found no evidence of a causal link between epidural analgesia during labour and low back pain

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Birth weight of offspring and insulin resistance in late adulthood: cross sectional survey

Debbie A Lawlor, George Davey Smith, Shah Ebrahim

Abstract

Objective To investigate the association between birth weight of offspring and mothers' insulin resistance in late adulthood.

Design Cross sectional survey.

Setting General practitioner's surgeries in 23 towns in Great Britain.

Participants 4286 women aged 60-79 years.

Main outcome measures Maternal insulin resistance.

Results Birth weight of offspring was inversely related to maternal insulin resistance in late adulthood. For each 1 kg higher birth weight of offspring, women had a 15% reduction in the odds of being in the fourth with highest insulin resistance, compared to other fourths (odds ratio 0.85; 95% confidence interval 0.71 to 1.00). This increased to 27% (0.73; 0.60 to 0.90) after adjusting data for potential confounders. A U shaped relation between birth

weight of offspring and diabetes in older age was found; women with the lightest and heaviest offspring had the highest prevalence of diabetes.

Conclusions Birth weight of offspring is inversely related to the mother's insulin resistance in late adulthood, despite the association of glucose intolerance during pregnancy with heavier offspring at birth. Common genetic factors probably contribute to the relation between birth weight and risk of cardiovascular disease and diabetes in adults.

Introduction

Low birth weight is associated with cardiovascular disease and type 2 diabetes in adulthood, but the mechanisms underlying these associations are unclear.¹ Poor intrauterine nutrition leads to babies with low birth weight and may "programme" selective changes in body composition, hormonal axes, and metabolism,

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Department of Social Medicine, University of Bristol, Bristol BSS 2PR

Debbie A Lawlor
MRC research training fellow
George Davey Smith
professor of clinical epidemiology
Shah Ebrahim
professor of epidemiology of ageing

Correspondence to: D A Lawlor
d.a.lawlor@bristol.ac.uk

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