

# Is appendicitis familial?

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## Summary and conclusions

A family history of appendicectomy was sought in two groups of children admitted to Llandough Hospital over sixteen months. The study group consisted of 29 children with histologically confirmed acute appendicitis, while the control group consisted of 29 children admitted for reasons unrelated to abdominal pain. A history of appendicectomy was elicited in first-degree relatives—that is, siblings and parents of 20 of the children in the study group and of four of the controls—a statistically significant difference.

The results obtained from this study suggest that a familial predisposition to appendicitis exists.

## Introduction

Acute appendicitis is the commonest surgical emergency in children, but its aetiology and pathology remain incompletely understood. Isolated families have been reported in which a strong family history exists,<sup>1-3</sup> but so far as we are aware no controlled study has been carried out to show a family history of the condition. The notion that appendicitis is familial is not only important for understanding the aetiology of the condition but might contribute substantially to the diagnosis and thus provide an indication for early surgical intervention.

## Subjects and methods

We followed up 29 children from Llandough Hospital (15 girls and 14 boys) aged 5-15 years with histologically proved acute appendicitis. This study group was extracted from pathology reports, each sex being taken consecutively. A control group of 29 children (15 girls and 14 boys) with the same mean age for each sex (boys 8.0 years, girls 7.9 years) were taken from admission books of the wards serving the same geographical population. All 58 children were Caucasians admitted to hospital during June 1977 to October 1978.

We excluded from the control group all children suffering from malignant disease, diabetes mellitus, mental retardation, and immune problems, and those receiving long-term steroid treatment; all

children who had presented with abdominal pain, on the grounds that a strong family history of appendicectomy might predispose to abdominal symptoms; and children who on follow-up were found to have had appendicectomies. The group included children admitted for elective surgical procedures, non-abdominal emergencies, and medical investigations. It was thus a mixed hospital population of children that we thought could not be distinguished from the general population from the point of view of appendicitis.

A questionnaire inquiring into the history of appendicectomy in first-, second-, and third-degree relatives was administered to the parents of both groups of children by six of us (NA, HG, JM, JR, AS, and IS). The groups were evenly allocated among the investigators, who interviewed parents either at their homes or by telephone. The questionnaire was structured so that each relative was asked about in turn and his/her age at the time of appendicectomy recorded. Pathology reports were not sought for affected relatives of either group.

## Results

A family history of appendicectomy among first-degree relatives (sibling or parents, or both) was found in 20 of the 29 children in the appendicitis group and in four of the 29 controls (table I). This

TABLE I—Numbers of children in both groups with first-degree relatives who underwent appendicectomy

	No in group	No with siblings affected	No with parent affected	No with parent or sibling affected
<i>Appendicitis group</i>				
Boys	14	2	8	9
Girls	15	4	9	11
Total	29	6	17	20
<i>Control group</i>				
Boys	13	1		1
Girls	16	1	3	3
Total	29	2	3	4

difference is unlikely to have occurred by chance ( $P < 0.001$ ). The average number of siblings in the control group was 1.95 per case and in the appendicitis group 2.25. More-comparable numbers of second-degree relatives (grandparents, aunts, and uncles) and third-degree relatives (cousins, second cousins, and great-grandparents) had had appendicectomies (table II). The average number of relatives asked about was 15 in the appendicitis group and 18 in the control group (range 0-56). In the control group three of the four parents

TABLE II—Numbers of children in both groups with first-, second-, and third-degree relatives who underwent appendicectomy

	No in group	No with relative undergoing appendicectomy:			No with no known affected relatives
		First-degree relative	Second-degree relative	Third-degree relative	
<i>Appendicitis group</i>					
Boys	14	9	5	5	3
Girls	15	11	10	5	2
Total	29	20	15	10	5
<i>Control group</i>					
Boys	13	1	7	3	4
Girls	16	3	5	3	6
Total	29	4	12	6	10

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who had undergone appendectomy were aged over 20 years at the time of operation. In the appendicitis group only two of the 17 parents affected were older than 20.

## Discussion

In so far as appendectomy is related to acute appendicitis our results suggest that there is a familial predisposition to appendicitis in childhood. This might be attributed to a familial dietary factor, in particular a low-fibre diet, which could predispose to faecolith formation and obstruction of the appendix lumen.<sup>6,7</sup> The geographical distribution of appendicitis in developed Western countries has been cited in support of this theory.<sup>8</sup> In the absence of a controlled study taking account of genetic, nutritional, and geographical considerations the theory is difficult to sustain, since 40% of normal appendices contain faecoliths<sup>9</sup> compared with only 10% of inflamed appendices.<sup>6</sup>

Another explanation of the familial predisposition is some genetic mechanism, possibly a polygenic inheritance. This would also be supported by the geographical distribution of the condition. Inherited developmental anomalies of the anatomy of the appendix have been suggested as one possible mechanism for any familial predisposition to acute appendicitis.<sup>1,10</sup>

A family history of appendectomy might provide a useful contributory indication for appendectomy, although a negative family history would not, of course, preclude acute appendicitis.

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# Obstetric anaesthetic and analgesic services in Wales

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## Summary and conclusions

**A survey of obstetric anaesthetic services in Wales covering 21 major units in which over 31 000 deliveries take place annually showed inadequacies in staffing at consultant and resident anaesthetist level. At least 20 additional consultant sessions were required to meet the recommendations of the Association of Anaesthetists of Great Britain and Ireland.**

**If patients' requests for epidural analgesia are to be met some reorganisation and centralisation of facilities is needed.**

## Introduction

Reports on maternal deaths in England and Wales during 1952-72<sup>1</sup> have shown that between 10 and 20 maternal deaths are associated with anaesthesia each year, while the proportion of such deaths had increased to 13.2% in the latest report (1979). From time to time obstetricians, anaesthetists, midwives, and the public express concern that facilities for obstetric anaesthesia and analgesia are inadequate. We therefore undertook a review of these services in Wales.

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## Methods

We obtained data concerning the 20 NHS consultant units and one large general practice unit in which caesarean sections are performed. We derived the distribution of births in Wales by area from data from the Office of Population Censuses and Statistics.<sup>2</sup> Data on regional analgesia was obtained from the Hospital Activity Analysis.<sup>3</sup> We used data acquired personally from obstetricians and anaesthetists, based on questionnaires and visits, to provide additional information on the available staff and services and the use of regional analgesia in maternity units.

## Results

Over 92.5% of deliveries in Wales take place in NHS consultant units (table I). This survey therefore covered most births in Wales (over 31 000 deliveries). Returns from individual units showed that about 2600 caesarean sections were performed annually.

TABLE I—Number (%) of births by place of confinement for each Area Health Authority in Wales, 1976<sup>2</sup>

Area health authority	Place of confinement					Total
	NHS consultant maternity units	NHS general practitioner maternity units	Home	Non-NHS hospitals	Elsewhere	
Clwyd	4265 (90.2)	377 (8.0)	70 (1.5)	1	18	4731
Dyfed	3335 (92.2)	210 (5.8)	64 (1.8)	1	17	3626
Gwent	4746 (90.5)	402 (7.7)	88 (1.7)	2	6	5244
Gwynedd	2505 (95.7)	88 (3.4)	13 (0.5)	1	10	2617
Mid Glamorgan	6386 (93.5)	247 (3.6)	185 (2.7)		12	6830
Powys	614 (50.9)	574 (47.6)	13 (1.1)		5	1206
South Glamorgan	4676 (98.9)	12 (0.25)	39 (0.8)	1	2	4730
West Glamorgan	4341 (98.6)	12 (0.27)	49 (1.1)		2	4404
Wales	30 868 (92.5)	1922 (5.8)	521 (1.6)	5	72	33 388