

Screening for undescended testes

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Abstract

There is general consensus among surgeons and paediatricians that cryptorchidism should be detected and treated by the age of 5 years, if not earlier. In reality, incomplete descent is often detected well beyond the age of 5. The effectiveness of local screening was assessed by reviewing the screening history and subsequent management of boys treated for undescended testes between 1983 and 1986. The detection rates for undescended testes in the boys under 5 years were low both for doctors and health visitors. In contrast, the school entry medical examination for 5 and 6 year olds had a higher screening yield. Over 40% of cases came to light as a result of parents recognising the condition and seeking medical opinion. Late detection had also occurred in some boys who had had previous genital surgery or examination. Methods to improve early detection and ways of monitoring proposed changes are discussed.

'Cryptorchidism is the only well established risk factor for testicular cancer'.¹ It is also associated with reduced fertility² and complications such as torsion.^{3 4} There is little evidence that early surgery improves fertility or reduces the risk of testicular cancer.² Nevertheless, because of the strong association between cryptorchidism and testicular cancer and the fact that changes in descended testes are easier to observe, there is general consensus among surgeons that cryptorchidism should be detected and treated by the age of 5 years,⁵ if not earlier.³ This view is endorsed by the report of the Joint Working Party on Child Health Surveillance, which states that 'infant boys should if possible be referred for surgical opinion before the age of 18 months'.⁶

Experience elsewhere has shown that in reality incomplete descent is often detected and referred well beyond the age of 5 years.³ Our study was carried out in response to a similar observation by local surgeons that a number of boys with undescended testes were 'missed' by screening and referred for surgical assessment when they were considerably older than 5 years. The aim of the study was to assess the effectiveness of local screening for undescended testes.

Methods

We reviewed the screening history and subsequent management of all boys up to 15 years of age resident in north east Essex who were treated in the north east Thames region for unde-

scended testes during the four year period 1983 to 1986. All hospital discharges with the diagnosis of undescended testes (ICD code 752.5) were identified by Hospital Activity Analysis. Hospital records, and community child health records if available, were examined for each case to ascertain the age at operation, source and pattern of referral to the general practitioner and surgeon, and any relevant medical history.

VALIDITY

Cases identified by Hospital Activity Analysis provided the best available estimate of true cases, because there is no other register of cases in the district. Only one girl and eight cases of torsion of the testes had been miscoded as undescended testes. It therefore seemed reasonable to assume that a similarly small number of true cases was probably lost to the study due to miscoding.

Boys who were screened outside the district were not included in the analyses. For example, boys who were born and had their check at 6 weeks of age outside the district were excluded from that part of the analysis. This exclusion was made for two reasons. Firstly, boys who moved into the district were not screened until the next formal screen was due (in this example, at the 8 month hearing check). Secondly, our aim was to report on the effectiveness of the local screening programme.

Results

In all, 313 operations on undescended testes were performed in the four year study period (table 1). All except one operation were performed in the district. Four operations were orchidectomies, the rest were orchidopexies. Nineteen boys had operations for undescended testes on two or more occasions during the study period.

AGE AT OPERATION (TABLE 1)

There was no child less than 1 year old. The boys divided into three roughly equal groups: those aged 1-4, those aged 5 and 6 (the age group most likely detected by school entry medical examination), and those over 6 years. The age distribution was consistent over the four year period.

OUTCOME OF SCREENING BY DIFFERENT PROFESSIONAL GROUPS (TABLE 2)

In theory, all boys resident in north east Essex

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Table 1 Age at operation

Age (years)	No (%)
1-4	92 (29)
5	52 (17)
6	57 (18)
7-15	112 (36)
Total	313 (100)

were examined by a doctor for testicular descent at birth and at the school entry examination at 5 years of age. The school medical examinations were always carried out by a clinical medical officer or senior clinical medical officer in child health. Neonatal examinations were carried out by a paediatrician or general practitioner depending on whether the baby was born in a consultant or general practitioner maternity unit.

In this district, basic development screening of children under 5 years was carried out entirely by health visitors during the study period, with clinical medical officers providing a second opinion when abnormalities were detected. Some general practitioners also carried out 6 week checks, but not as part of the district's child surveillance programme. Testicular examination was, however, excluded from the formal content of the health visitor's screening programme, and was only performed by a

few health visitors at the checks at 6 weeks and 8 months at their own discretion.

Data were analysed to determine the proportion of cases detected by each of these 'screener' groups (table 2).

Records were available for 220 boys screened by a doctor in infancy, for 217 boys screened by a health visitor at less than 5 years, and for 263 boys screened by a clinical medical officer at school. Detailed results are shown in table 2.

OUTCOME OF SCREENING UP TO SCHOOL ENTRY (TABLE 3)

The proportion of cases detected by each 'screener' group and treated by the age of 6 was analysed as a measure of the success of screening in the district (table 3). Doctors and health visitors had referred about 18% (17/92) and 9% (9/92), respectively, of cases operated by the age of 5 years. School doctors had referred 62% (68/109) of cases operated on between 5 and 6 years of age.

SOURCE OF FIRST REFERRAL (TABLE 4)

Looking at the detection and referral rates of 'screener' groups was useful to assess the success of each group in detecting cases. But some cases had been detected and referred by more than one person. For example, some boys referred by health visitors were already under surveillance by their general practitioner or paediatrician. We therefore recorded for each case the person responsible for initiating further management by making the first referral. Parents were responsible for nearly half of all first referrals (table 4). Just over a quarter of the operations were attributable to detection and referral by school doctors.

Table 2 Outcome of screening in north east Essex district by different professional groups. Results are number (%) from notes available

Outcome	Screener*		
	Doctor	Health visitor	Clinical medical officer
Undescended testes noted:			
No follow up	23 (10)	14 (6)	10 (6)
Referral to general practitioner/surgeon	19 (9)	12 (6)	99 (62)
Descent noted	70 (32)	33 (15)	46 (29)
On waiting list for operation	—	—	3 (2)
Medical examination not done	—	—	1 (<1)
No record of testicular examination	108 (49)	158 (73)	—
Operation already done	—	—	104
Notes not available	75	79	47
Total	295	296	310

*Boys were screened by a doctor as neonates or at 6 week check, by a health visitor at <5 years, and by the clinical medical officer at school at 5 or 6 years.

Table 3 Outcome of screening by age at operation (n=313)

Screener*	1-4 years		5-6 years		7-15 years (all operated too late)	
	Success†	Failure‡	Success†	Failure‡	Success†	Failure‡
Doctor	17	40	2	31	0	22
Health visitor	9	19	1	10	2	18
Clinical medical officer	—	—	68	9	31	47

*Boys were screened by a doctor as neonates or at 6 week check, by a health visitor at <5 years, and by the clinical medical officer at school at 5 or 6 years.

†Success: noted and referred for action; failure: noted, no action taken, and noted as descended. Boys considered screening failures were detected and referred by others, for example, parents.

Table 4 Source of first referral by age

	Age (years)		
	1-4	5-6	1-15 (all boys)
No (%) referred to general practitioner:			
Parents	42 (46)	32 (29)	134 (43)
Health visitor	6 (7)	1 (1)	9 (3)
Clinical medical officer	1 (1)	57 (52)	82 (26)
Paediatrician	12 (13)	5 (5)	11 (4)
Self referral	—	—	2 (<1)
No (%) not referred to general practitioner:			
General practitioners own follow up	5 (5)	3 (3)	13 (4)
Surgeon's follow up	4 (4)	3 (3)	14 (4)
Paediatrician's follow up	—	—	8 (3)
Not known	22 (24)	8 (7)	40 (13)
Total	92 (100)	109 (100)	313 (100)

Table 5 Previous medical history (n=313)

	No (%)	No whose management not influenced by history
Previous orchidopexy same side	18 (5.8)	4
Previous orchidopexy opposite side	30 (9.6)	10
History of any other genital operation	29 (9.3)	22
Hospital admission	21 (6.8)	14
Any one of the above	67	37

MEDICAL HISTORY (TABLE 5)

We noted any past medical events that would have presented an opportunity for testicular examination (table 5). In all, 67 cases had histories of previous operations or hospital admissions, of which the detection or further management of undescended testes had not been influenced by such a history in 37 cases.

Discussion

This study has obvious limitations. It is not a population based study so we are unable to estimate the number of males in the general population with undescended testes who have still not been detected. Only those who have been detected and operated on are included in the present study because we were forced to rely on Hospital Activity Analysis files for the case finding. Nevertheless, the results have pointed the way to some practical measures to improve the effectiveness of screening. Secondly, the data reflects past screening practices. But screening policies had not undergone much change until recently, and the age distribution in 1989 of operations for undescended testes showed the same preponderance of boys older than 5 years.

The results showed low detection rates for undescended testes in those under 5. The obvious explanation for this is the omission of testicular screening from the formal content of the health visitors' programme.

Three additional reasons may have contributed to the poor results: (i) faulty or poor examination technique, (ii) confusion between maldescent and retractile testes; and (iii) no follow up of late initial descent between birth and 3 months. Late descent may sometimes progress to undescended testes by the first birthday.⁶

The difficulty in diagnosing maldescent must be recognised and probably accounts for many of the cases recorded as 'descended'. There is evidence that retractile testes are sometimes mistaken for undescended testes and vice versa.⁷ The problem in distinguishing the two conditions is highlighted by the cases whose diagnosis was delayed despite previous genital surgery and expert surgical examination. It also reflects the need for good quality training in screening skills.

Another factor that may contribute to the confusion is the ascent of the testis from a previously normal to an undescended position. This unusual occurrence has been described by Atwell.⁸ We support this hypothesis because we encountered 10 cases where descent had been recorded at two or more screening examinations

by different people, which makes 'observer error' an unlikely explanation.

The school medical examination with its higher screening yield was a useful safety net to detect many more cases of maldescent before these boys escaped the developmental screening programme altogether. This finding supports the view that general practitioners should screen children at around 5 years of age, when school entry medical examinations are dropped or replaced by nurse health interviews. An additional benefit of this is that a standardised screening programme will be available to boys attending private schools who may not at present be receiving the district's school health service.

Over 40% of cases were diagnosed as a result of parents recognising maldescent and taking their sons to a doctor for examination. Parental participation is recognised as an important component of the recent recommendations on child health surveillance.⁹ We suggest that late detection could be avoided if all parents of boys were taught by health visitors or general practitioners to be aware of the problem and encouraged to seek medical opinion when in doubt.

PROPOSED CHANGES

The new guidelines on child health surveillance¹⁰ provide an ideal opportunity to resolve some of these problems. From April 1990, health authorities have had to specify clearly the content of their surveillance programme. We have proposed that general practitioners selected to carry out surveillance, and health visitors and clinical medical officers who are covering the rest of the population, should be given the responsibility to carry out a defined set of screening procedures including testicular screening. This should leave little scope for cases to be missed in the future.

All those who carry out screening should be given formal training so that they can examine testes correctly and communicate with parents to encourage their participation in surveillance.

PROPOSED AUDIT

Any changes we expect as a result of our recommendations need to be monitored, and we propose to do so in three ways. Firstly, surgeons will continue to notify us of older boys referred to them for the first time; this will enable us to review individual screening histories. Secondly, the age distribution of boys operated on for undescended testes will be reviewed annually for a five year period to determine whether the proportion of boys over the age of 5 years declines. Lastly, this study is to be repeated in five years' time to see whether the changes instigated have had the desired effect.

CONCLUSION

There had been considerable unease in the community child health department for sometime because of the omission of testicular screening from the health visitors' programme. However, the impetus to examine the problem came from the concern expressed by the surgeons. This

study highlights the usefulness of audit, but the effort involved in collecting and analysing data pertaining to just one aspect of surveillance must not be underestimated. We are confident that simple measures such as greater health visitor involvement alone will substantially reduce late detection. Routine monitoring will show whether the primary objective of early detection is achieved in the future.

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Group A β haemolytic streptococcal disease

Beginning in the mid 1980s an increase in the incidence of rheumatic fever was reported from several centres in the United States and we braced ourselves for a resurgence of the disease in Britain, but so far it does not seem to have materialised to any great extent. Towards the end of the decade there were reports of an increase in invasive group A β haemolytic streptococcal disease in adults from various American centres and now a similar increase in children has been reported from North Carolina by Laurence Girner and his colleagues (*Journal of Pediatrics* 1991; 118:341-6).

In three and a half years from July 1983 there were six cases at the Brenner Children's Hospital, Winston-Salem, and in the subsequent three and a half years there were 16 cases. The increase was not explained by changes in admission numbers, type of case, or diagnostic practice. Half of the 22 cases had no apparent underlying susceptibility to infection but of the remaining patients six had indwelling catheters, either vascular or peritoneal, and two were receiving immunosuppressive therapy. Sixteen children had septicaemia, two had peritonitis (one with an indwelling Tenckhoff catheter), and one each had orbital cellulitis, an infected ventriculoatrial shunt, a soft tissue abscess, and septic arthritis affecting a proximal interphalangeal joint.

With group A streptococci continuing to cause problems in the United States we on this side of the Atlantic must clearly continue to be vigilant.

ARCHIVIST