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Audit of clinical documentation of external genitalia examination findings in the newborn: The Benin-city experience

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Abstract: *Background:* Over the years, poor medical documentation is a well known phenomenon in medical practice but the magnitude of the problem in our setting has not been defined.
Objective: To assess the overall frequency of missed detection of anomalies of external genitalia following the routine newborn physical examination and to describe the general pattern of its documentation.
Methods: In this hospital-based descriptive cross-sectional study, 915 full-term newborn infants in an open population survey were systematically screened for anomalies of the external genitalia, using a checklist derived by modifying parameters in the Prader scoring system and the External masculinization score charts. The pattern of documentation was assessed in 915 case files. The findings of the researchers were then compared to those previously documented by the attending physician/midwife. The study was conducted in two Nigerian hospitals (University of Benin Teaching Hospital and St Philomena Catholic Hospital) in Benin City. All members of staff of the two hospitals were blinded to the fact that the previous examination findings documented in the case files were being assessed during this study.
Results: Of the 915 infants, 19 (2.1%; 95% CI= 1.2-3.0) had anomaly of the external genitalia at birth. The overall frequency of missed diagnosis of external genital anomalies was 68.4% with undescended testes (UDT) being the most frequently missed. The level of documentation of the findings of the external genital examination was poor in both hospitals. Combining the two hospitals, the external genital examination findings were not documented in 76.1% of case files.
Conclusions: The routine newborn examination as currently practiced in the two hospitals was weak in detecting external genital anomalies. Poor documentation of the external genital findings is a common occurrence in the setting where we practice, irrespective of whether the health institution is tertiary or secondary.

Key words: Audit, clinical documentation, external genitalia anomalies, missed diagnosis, routine newborn examination.

Introduction

The routine examination of the newborn refers to the examination that is carried out between 6 and 72 hours after birth by an appropriately trained healthcare professional and with the parents' consent[1]. The National Institute for Health and Care Excellence (NICE) guideline recommends that such examination findings be recorded in the postnatal care plan and in the personal child health record[1]. However, the application of this guideline has not received sufficient attention in Nigeria. In one sense, the newborn physical examination represents a screening procedure. The aims of the procedure include (i) to detect congenital anomalies (ii) to detect clinical conditions that might have an adverse effect on the health of the infant and institute a plan of management and (iii) to impact advice and/or reassurance to parents. Although there is a general feeling that missed diagnosis is common, with many clinicians giving anecdotal accounts of their own experiences, there is a relative lack of studies on the subject of misdiagnosis. Over the years, poor medical documentation is a well-known phenomenon in medical practice but the magnitude of the problem, particularly in developing countries, has not been

defined. Apart from occasional medical audit, studies focusing on this issue are scarce. Patients' records are among the most basic of clinical tools and are involved in almost all consultations and interactions with patients at all levels. They are to give a clear and accurate picture of the patient's clinical status at birth (the external genitalia inclusive). They help doctors to communicate with other doctors, with other healthcare professionals and with themselves. Clinical records are essential to ensure that the individual's assessed needs are met, comprehensively as well as timely. The record is the clinician's main defense, if his assessments or decisions are ever scrutinized.[2] The quality of the case record will be assumed to reflect the quality of care received[2].

An extensive search of the literature did not reveal any Nigerian study that has examined the quality and documentation of routine newborn examination and its reliability in detecting anomalies of the external genitalia. Such documentation has the potential of enhancing collection and gathering of data on anomalies of the external genitalia. More importantly, it could contribute to saving the lives of such neonates which will ultimately reduce infant mortality as envisaged in MDG 4.[4] In developed countries where healthcare systems are strong, the standard of record-keeping in health institutions have been variously criticized by public bodies and official inquiries into deficiencies of care[5-9]. Given that healthcare systems are generally weak in developing countries, the level of record-keeping in these countries is likely to be poorer compared with developed countries. The above factors prompted the present study. The purpose of this study was to assess the overall frequency of missed detection of anomalies of external genitalia following a routine newborn physical examination and to describe the general pattern of documentation of its findings.

Subjects and methods

The study was conducted in two hospitals in Benin City, namely, the University of Benin Teaching Hospital (UBTH), a tertiary healthcare level institution and St Philomena Catholic Hospital (SPCH), a secondary healthcare level institution. SPCH is located at the centre of Benin City and ranks second among maternity units in Benin City. As a policy, in both hospitals, mothers usually stay for 2-3 days before discharge, forming the basis for the selection of these two hospitals for the study. This ensured availability of the newborn infants for physical examination in the first 72 hours of life.

Study population

Nine hundred and fifteen (915) consecutively live-born term neonates aged between 6 and 72 hours whose parents gave consent for the newborn physical examination and who were delivered in the study hospitals during the study period were recruited into the study. The case files (915) were also assessed. All still-born neonates and all preterm neonates and neonates delivered outside the study hospitals were excluded.

The study was approved by the Ethics and Research Committee of the University of Benin Teaching Hospital. Permission was obtained from the authorities of the two hospitals. Consent was obtained for examination of the newborn infants from their mothers, after informing them of specific objectives of the study.

A newborn external genitalia examination checklist combining parameters in the Prader Scoring system[10] and External Masculinization Score (EMS)[11] charts was developed by the researchers to assist in assessing the reliability of the routine newborn examination in detecting anomalies of the external genitalia. Research assistants (a female nurse and a doctor) were trained for the study. The research assistant (a medical doctor) was trained on the "two-handed technique" for the examination of the testis as well as on the technique for measurement of the penile length. The female nurse was trained on the method of holding and positioning the newborn infant for examination of the external genitalia and she also acted as a chaperone during the newborn physical examination. The stretched penile length of the infant was also measured. The rank of the health professional who performed the routine newborn examination was also documented.

The researchers assessed the physical examination findings which have been previously documented by the attending physician/midwife in the case file of each infant and compared these with researchers' own findings on direct physical examination of the external genitalia of the newborn, using the checklist as a guide. The phrase 'marked good' refers to situations where the symbol "√" was placed beside the area for documentation of the external genitalia physical examination finding. The attending physicians/midwives were not aware that the previous documentation in the case file was being assessed in this study. Before commencement of data collection, the authors and the assistants practiced with the checklist until their documentation for each baby reached agreement. The examination took place in the labour/postnatal ward at room temperature with the neonate lying in supine position. The testicular examination of the infant involved a two-handed technique. The examining hand is gently swept along the inguinal canal, starting at the superior-lateral extent of inguinal canal. A true undescended or inguinal testicle will be felt to "pop" under the examiner's fingers during this maneuver. A retractile testicle will be felt by the opposite hand as it is manipulated into the scrotum.[12]The position of the testis was recorded after its manipulation to the most distal position along the normal pathway of anatomical descent without forced traction. In this study, the position of the each testis was categorized into two major group as normal (if they were either normal scrotal or normal retractile) or undescended. The undescended group was sub-classified into prescrotal (if they were high scrotal or suprascrotal), inguinal or non-palpable testes.[13]In female newborns, the external genitalia (labia, clitoris, urethral opening) were inspected as recom-

mended by Scanlon et al.[14] The presence of a minor abnormality such as hymenal tag (which protrudes from the floor of the vagina) was examined for. Where ambiguity of the external genitalia was present, its degree was assessed, using the Prader Scoring System.[10]

All the members of staff were blinded to the fact that the previous examination findings documented in the case files would be assessed in this study. Each of the parents was informed of the findings of the physical examination of their baby. Any anomaly detected was discussed with the parents including available management modalities and referrals. Each study subject was treated as deemed fit, depending on the infant's clinical condition. Other congenital anomalies, such as the patency and location of the anus were sought after detection of a genital anomaly.

Statistical analysis

The statistical analysis was performed using the SPSS software package version 15.0 (SPSS, Inc. Chicago, IL, USA). Descriptive statistics such as frequencies, means, ratios, confidence intervals, odds ratios and percentages were used in describing all the variables.

Results

During the four-month period (October, 2013 to January, 2014) covered by the study, there were 612 and 410 deliveries at the UBTH and SPCH respectively, corresponding to a total of 1,022 deliveries. As a result of multiple births, the total number of babies were 627 and 418 in UBTH and SPCH, respectively. There were two stillbirths in UBTH and one in SPCH. The total number of live-born babies in the two hospitals was 1,042 (530 males and 512 females); giving a male-to-female ratio of 1:1. One hundred and twenty seven (12.2%) of the 1,042 infants were preterm (76 in UBTH and 51 in SPCH). Thus, the newborns analyzed for the study consisted of 915 (465 males and 450 females) full-term infants. The case files of 915 infants were reviewed. Excluding cases written no abnormality detected (NAD) or marked with the symbol "√", documentation concerning the external genitalia was done in 5.6% (31/549) of cases in UBTH and in 1.9% (7/366) of cases in SPCH; Odds ratio 3.06 (Table 1). In addition, Table 1 shows that documentation of the findings of external genital examination was poor in both the tertiary (UBTH) and the secondary (SPCH) healthcare institutions. All the cases with some written documentation were done by physicians and these were infants with birth asphyxia, meconium aspiration syndrome, respiratory distress and infants of diabetic mother requiring admission into the Special Care Baby Unit. There was no significant difference between doctors and midwives in terms of other patterns of documentation in both hospitals. Of 219 cases documented on, anomalies were found in 13(5.9%).Anomalies were found in 6(0.9%) of 696 cases without any documentation at all. Thus, the overall frequency of missed diagnosis was 68.4% (13/19).The overall prevalence of external genital anomalies was 2.1% (19/915); 95% CI= 1.2-3.0). As shown in Table 2, undescended testes (UDT) was the most frequently missed developmental anomaly of the external genitalia following a routine newborn examination. Of the 9 cases in which the diagnosis of undescended testes was missed, 5 occurred in UBTH while 4 occurred in SPCH. Four (2 in UBTH and 2 in SPCH) cases of hypospadias were missed. However, the frequency of "some documentation" was 3 times higher in UBTH than SPCH.

Table 1: Comparison of pattern of documentation of the external genitalia findings in the two hospitals following routine newborn examination.
*UBTH = University of Benin Teaching Hospital (Tertiary healthcare institution)
**SPCH = St Philomena Catholic Hospital (Secondary healthcare institution).

Pattern of documentation of external genitalia examination findings	UBTH* No (%)	SPCH** No (%)	Odds ratio (UBTH vs SPCH)	UBTH plus SPCH No (%)
Documented as no abnormality detected (NAD)	42 (7.7)	30(8.2)	0.9	72(7.9)
Marked '√'	67(12.2)	42(11.5)	1.07	109(11.9)
With some written Documentation	31 (5.6)	7(1.9)	3.06	38(4.1)
Without any documentation at all	409(74.5)	287(78.4)	0.80	696(76.1)
Total	549(100.0)	366(100.0)		915(100.0)

Table 2: Frequency of missed diagnosis of external genital anomaly during routine newborn examination

External genital anomaly	No missed	Frequency (%)	95% CI
Undescended testis (n=11)	9	81.8	81.2-81.9
Hypospadias (n=6)	4	66.7	66.5-66.9
Ambiguous genitalia (n=2)	0	0.0	

Discussion

In the two hospitals studied, a poor pattern of documentation of the findings of the external genital examination was observed, suggesting that it is a common problem. It might also mean that the status of the external genitalia of these babies were not assessed, resulting in lack of documentation. Whether the hospital was a tertiary- or secondary-healthcare institution did not appear to have a significant influence on the rate of poor documentation. Previous studies from developed countries with well established healthcare systems have reported a similar observation, suggesting that it is a widespread problem in clinical practice.[14,15] With regard to documentation of clinical findings, this level of clinical practice falls short of the NICE recommendations[1] and therefore, needs to be improved upon. The phenomenon of incomplete documentation in patients' clinical records may have far

-reaching consequences on the health institution (e.g., litigation, lack of or inadequate epidemiological data), the healthcare provider (e.g., litigation, misdiagnosis, poor communication between physicians and other healthcare practitioners) and the children (e.g., improper or delayed treatment, long-term complications like infertility and testicular cancer in cryptorchidism, death in cases of unrecognized congenital adrenal hypoplasia). It is noteworthy that a diagnosis of acquired cryptorchidism (a well recognized phenomenon[17,21,22]) can only be made if a previous documentation of the presence of testis in the scrotal sac is available, further emphasizing the importance of clinical documentation of newborn external genital examination findings.For these reasons, every health institution should ensure accurate and complete documentation of the clinical findings at all times, irrespective of the status of the healthcare practitioner who is involved. This is also important in avoiding litigation as more people become aware of their rights with regard to healthcare practice. For example, delayed or no treatment in cases of cryptorchidism with the attendant potential complications of impaired male fertility and testicular cancer later in life.

Data from the present study, confirm that the clinical problem of missed diagnosis of anomaly of the external genitalia is common (approximately two-third of cases). In over three-quarter of cases the diagnosis of undescended testes was missed while the diagnosis of hypospadias was missed in two-third of cases. Thus, suggesting that among the anomalies of the external genitalia, undescended testes was the dominant clinical condition whose diagnosis was missed. This observation is not surprising as it is in agreement with the report of several other studies. [16-19]However, there was no Nigerian study reporting on the subject for comparison. The high rate of missed diagnosis observed in this series suggests that inadequate attention is being paid to examination of the external genitalia by the healthcare professionals. This view is in keeping with the observation by Shapiro.[21] The high rate of missed diagnosis may be a reflection that healthcare professionals tend to skip examination of the external genitalia. Such tendency in our clinical practice may be related to our local culture which discourages discussions on issues concerning the external genitalia. In literature, this fact was alluded to by Yarhere and Ahmed.[3] They stated that sexual issues are taboo subjects in many societies.[3] It may also relate to laziness on the part of the healthcare practitioner. One way of tackling the problem of missed diagnosis is by developing and popularizing a standardized method of examination of the external genitalia during routine newborn examination. The method could then be extended to our rural healthcare facilities, thereby promoting referral of neonates with anomalies of external genitalia to the tertiary healthcare hospitals. Data from our study have the potential of forming the basis for intervention strategies aimed at improving the quality of postnatal care and the general standard of practice, including documentation of clinical findings.

Conclusion

In conclusion, the routine newborn examination as currently practiced in the two hospitals was weak in detecting anomalies of the external genitalia. Poor documentation of the findings on physical examination of the external genitalia is a common phenomenon in the setting where we practice, irrespective of whether the healthcare institution is tertiary or secondary.

Conflict of Interest: None

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References

1. The National Institute for Health and Care Excellence (NICE). Postnatal care: Routine postnatal care of women and their babies; NICE Clinical Guideline, 2006.
2. Medical Defence Union. Can I see the records? London: Medical Defence Union, 2003.
3. Yarhrere I, Ahmed SF. Disorders of sexual development in resource-limited settings. In: Zacharin M, ed. Practical Paediatric Endocrinology in a Limited Resource Setting. 2011:99-108.
4. United Nations. Millennium Development Goals: Goals, targets and indicators. Available at: http:// www.unmillenniumproject.org/ goals/gti.htm.Accessed March 18, 2013.
5. American Academy of Pediatrics. Evaluation of the newborn with developmental anomalies of the external genitalia. *Pediatrics 2000;106(1):138-142*.
6. Gloucestershire Hospitals NHS Foundation Trust. Examination of the newborn policy, 2012.
7. Pullen I, Loudan J. Improving standards of clinical record-keeping. *Adv Psychiatr Treat 2006;12:280-286.*
8. Audit Commission. Setting the records straight: A study of hospital records. London: Audit Commission, 1995.
9. Birchard K. Irish Ombudsman finds medical records 'atrocious'. Lancet 2001;358:48.
10. Prader A. Der genitalbefund beim pseudoherafroditismus feminius des kongenitalen adrenogenitalen syndroms. *Helvetica Paediatrica Acta 1954;9:231-248.*
11. Ahmed SF, Khwaja O, Hughes IA. The role of a clinical score in the assessment of ambiguous genitalia. *BJU International 2000; 85:120-124.*

12. Docimo SG, Silver RI, Cromie W. The undescended testicle: Diagnosis and management. *Am Fam Physician 2000;62 (9):2037-2044.*
13. Virtanen HE, Bjerknes R, Cortes D, Jorgensen N, Rajpert-De Meyts E, Thorsson AV, Thorup J, Main KM. Cryptorchidism: Classification, prevalence, and long-term consequences. *Acta Paediatrica 2007;96(5):611-616.*
14. Scanlon JW, Nelson T, Grylack LJ, Smith YF eds. A System of Newborn Physical Examination, Baltimore, University Park Press, 1979; pp81.
15. Gyawali B, Bhattacharyya S, Reid JA. Medical audit of community screening for undescended testes in Halton District. *Public Health 1993;107(5):343-347.*
16. Rao M, Wilkinson J, Benton DC. Screening for undescended testes. *Arch Dis Child 1991;66:934-937.*
17. Virtanen HE, Toppari J. Epidemiology and pathogenesis of cryptorchidism. *Hum Reprod Update 2008;14:49-58.*
18. Sarmah A. Late diagnosis of cryptorchidism: a failure of medical screening? *Arch Dis Child 1992;67:728-730.*
19. Boggis ARJ, Rowlatt RJ. A study of sources of delay in diagnosis and treatment of undescended testicle. *J Royal Coll Gen Pract 1989;34:440-446.*
20. Shiryazdi SM, Modir A, Benrazavi S, Moosavi N, Kermani-Alghoraishi M, Ghahramani R. Causes of delay in proper treatment of patients with undescended testes. *Iranian J Reprod Med 2011;9(1):37-40.*
21. Shapiro E. The risk of retractile testis becoming ascending testis. *Rev Urol 2006;8(4):231-232.*
22. Wohlfahrt-Veje C, Boisen KA, Boas M, Damgaard IN, Kai CM, Schmidt IM, Chellakooty M, Suomi A, Toppari J, Shakkebaek NE, Main KM. Acquired cryptorchidism is frequent in infancy and childhood. *Inter J Androl 2009;32(4):423-428.*