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PREDICTORS OF INTESTINAL PERFORATION IN CHILDREN WITH TYPHOID FEVER

A Case Study by Dr. Abdul Azees.V.K, India
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ABSTRACT

Typhoid fever is a major public health problem globally; the greater burden however occurs in the developing countries because of lack of potable water and proper waste management. The disease is associated with a high mortality rate especially in those with enteric perforation or intestinal hemorrhage. The goal of this study was to identify the clinical and laboratory factors that predict the development of enteric perforation in children with typhoid fever.

This study was a retrospective case control analysis of children admitted for typhoid fever without or with enteric perforation over a three year period in a newly established teaching hospital in Kannur. Forty seven children with typhoid fever and enteric perforation (cases) were compared with 94 controls (those without typhoid fever but without enteric perforation). Multivariate analysis using logistic regression was applied to all the factors that were initially significantly associated with enteric perforation. Male sex (Odd Ratio, OR=3.10, p=0.003); inadequate treatment (OR=3.03, P < 0.001); short duration of illness (OR=2.36, P=0.030); neutrophilia (OR=2.92, P=0.013) and elevated ESR (OR=1.07, P=0.041) were found to have independently contributed to development of perforation in children with typhoid fever. This study has attempted to outline the factors that may predict typhoid ideal perforation in children, thereby helping in recognition of high risk cases and drawing up of screening tool to facilitate effective and prompt management.

KEYWORDS: Children, Clinical, Laboratory, Perforation, Predictors, Typhoid

INTRODUCTION

Typhoid fever is a systemic illness caused by infection with Salmonella typhi, a gram negative bacillus, found only in humans (1). Although it is a major public health problem globally, the greater burden occurs in developing countries where most population neither have adequate and potable water nor proper waste disposal methods (1, 2). According to World Health Organization (WHO) and United Nation Children Fund (UNICEF) report, as at 2010, more than one billion people, especially those living in developing countries, do not have access to safe water (2).
The annual incidence of typhoid fever ranges from 10.2 to 50.3 per 100,000 population in most parts of the developing countries (3). The disease is associated with high mortality rate especially in those with enteric perforation and intestinal bleeding (3). WHO estimated that the annual global incidence of typhoid fever is about 21 million cases with about 1-4% mortality. Adesunkanmi et al, reported a mortality of 24% among children and adolescents with typhoid perforation in a tertiary hospital in a south western Nigeria.

Few studies have attempted to describe the risk factors for enteric perforation in adults with typhoid fever. To the best knowledge of the authors, relatively little is known about factors predictive of enteric perforation in children with typhoid fever. Prompt identification and management of these factors may ultimately reduce the high morbidities and mortality associated with cases of childhood typhoid fever.

MATERIALS AND METHODS

The study was a retrospective case-control analysis of children aged two months to fifteen years who were admitted for typhoid fever with or without perforation over a 3 year period (January, 2008-December, 2010) at University Teaching Hospital, Kannur. Diagnosis of typhoid fever was made based on the clinical presentations as well as isolation of Salmonella typhi from the blood, stool or urine of the child using standard microbiological procedures (6). The clinical criteria used included persistent fever (fever duration longer than 7 days) and at least two of the following - constipation or diarrhea, anorexia, abdominal pain, abdominal rigidity, relative bradycardia and alteration in the level of consciousness (7). In addition to the haematological and microbiological investigations such as complete blood count, blood, stool and urine culture, all the children with acute abdomen had plain abdominal radiograph as well as abdominal ultrasonography for evidence of intestinal perforation such as the presence of air under diaphragm, free abdominal fluids and multiple air fluid levels. In most cases, abdominal radiography was done in erect position; however, for those who were unconscious, it was done in supine position.

The cases were children admitted with typhoid fever and radiological and surgical evidences of enteric perforation; either on admission or during the period of hospitalization. Children with traumatic or nontraumatic intestinal perforation not due to typhoid fever, such as ruptured appendix, abdominal tuberculosis, HIV were excluded from the study. The controls were children with clinical and microbiological evidence of typhoid fever but with no clinical, radiologic and surgical evidence of intestinal perforation.

The information collected from the patient’s files were: age, gender, socioeconomic status of the parents, clinical symptoms, physical signs, hematologic, microbiologic, radiologic and operative findings where applicable, management and treatment outcome. In addition, treatment before admission into the hospital either at home or in the referral hospital was documented for all the patients. Those who received antibiotics that were presumably effective against Salmonella typhi at correct dose and for at least 3 days before presentation were considered as
having adequate therapy prior to presentation. Chloramphenicol, Amoxicillin, Ciprofloxacin and Cephalosporins were taken as effective chemotherapeutic agents against Salmonella typhi (9).

The interval between the onset of first symptom and presentation in our hospital was defined as the duration of illness prior to admission with duration of illness less than or equals 14 days taken as short duration (7). The socioeconomic status of the parents was based on the occupation and the highest level of education of the parents.

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The two groups (cases and control) were compared in terms of their socio-demographic characteristics (age, sex, socioeconomic class), clinical symptoms and signs including duration of illness prior to presentation, adequacy of therapy before presentation, presence of high fever (temperature > 38.5) and hepatosplenomegaly. In addition the two groups were compared based on their laboratory findings such as haematocrit, complete blood counts and differentials, serum AST and ESR. These blood indices were selected because they are commonly deranged in complicated enteric fever.

The data were analyzed using SPSS version 17. Tests of association between the variables and the presence of enteric perforation were performed with chi-squared and student’s t test for categorical and continuous variable respectively. Variables with statistically significant association with perforation were further analyzed with logistic regression modelling to identify the independent predictive factors of intestinal perforation in children with typhoid fever. Results of logistic regression were presented with Odds Ratio (OR) and 95% Confidence Interval (CI). Statistical significance was established when P values where <0.05 or Confidence Intervals excluded unity.

RESULTS

During the study period a total of 193 children with blood, stool and or urine culture positive for Salmonella typhi were managed in the PICU of the hospital. One hundred and forty one of these children, comprising of all the 47 cases (those with enteric perforations) and 94 controls
(those without enteric perforations who were selected at random) were included in the study. The rate of typhoid fever perforation was 24.4%. Seventy-eight (55.3%) of the children studied had Salmonella typhi isolated from their blood, forty five (31.9%) from the stool and twenty seven (19.1%) from the urine. Nine (6.4%) had positive blood and urine culture.

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<td>Cases n = 47</td>
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<tr>
<td>Sex</td>
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<tr>
<td>Male</td>
<td>34 (72.3)</td>
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<tr>
<td>Female</td>
<td>13 (27.7)</td>
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<td>Age group (in years)</td>
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<td>1-5</td>
<td>5 (10.6)</td>
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<td>&gt; 5-10</td>
<td>35 (74.5)</td>
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<td>&gt; 10</td>
<td>7 (14.9)</td>
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<td>9 (19.1)</td>
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<td>Middle class (III)</td>
<td>7 (14.9)</td>
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<td>Lower class (IV-V)</td>
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The 47 children with surgically confirmed enteric perforation (cases) comprised of 34 males and 13 females with a male to female ratio of 2.6:1. Their ages range from 26 to 184 months with a mean standard deviation (SD) of 96.51 (31.30) months. Also, 94 children whose blood, stool, and or urine were positive for Salmonella typhi organism but had no clinical or radiological evidence of enteric perforation who were selected as control were comprised of 43 males and 51 females (the ratio female to male 1.2:1). The mean (SD) age of the control was 93.56(39.70) months, ranging from 22 to 180 months. Although the mean (SD) age of the cases was higher than the control; the difference was not significant statistically ($t=0.45$, $p=0.657$). However, significantly higher proportion of males had perforation as 34 (44.2%) of the 77 males compared with 13 (20.3%) of the 64 females had enteric perforation ($x^2=8.941$, $p=0.003$).
Tables 1-3 compare the sociodemographic characteristics, clinical features and the laboratory findings between the cases and the control. From Table 1, significantly higher proportion of cases were males, school aged and from lower social class (p=0.0003, 0.020 and 0.023, respectively). Also, as shown in Table 2, more cases had short duration of illness (onset of illness to presentation < 14 days), inadequate treatment before presentation to our unit and rebound tenderness (p=0.025, 0.010 and <0.001, respectively). The duration of illness before presentation among the cases ranged from five to 21 days, with a mean (SD) of 9.03 (2.12) days, whereas that of the control ranged from 6 to 28 days, and a mean (SD) of 14.77 (4.22) days. The average duration of illness in cases was significantly shorter than that of the control (t = 8.78, df = 139, p <0.001). Table 4 shows that neutrophilia (p = 0.011), elevated ESR (p < 0.001) were significantly associated with enteric perforation.
Multivariate analysis using logistic regression was applied to all the factors that were significantly associated with enteric perforation. As presented in Table 4, male sex (OR =3.10, P =0.003); inadequate treatment (OR =3.03, P <0.001); short duration of illness (OR =2.36, P=0.013) and elevated ESR (OR =1.07, p =0.041) were found to have independently contributed to the occurrence of perforation in children with typhoid fever.

In term of mortality, six of the 47 children (12.8%) with typhoid perforation and two of the 94 children (2.1%) without perforation died. Significantly higher proportion of children with intestinal perforation died(x² =4.787, df=1, p =0.029).

**DISCUSSION**

Enteric perforation in children with typhoid fever is still is a major health problem in our environment, with a rate of 24.4% in the children we studied. This rate is within the quoted 10-30% rates reported in many studies in developing countries (1, 5, 7, and 8). In this study, some socio-demographic characteristics, clinical features and laboratory findings were found to be significant independent predictors of enteric perforation in children with typhoid fever.

The finding of a male gender as an independent factor for enteric perforation in children is in concordance with some previous studies (8, 10). Hosoglu et al found that significantly more males than females (M:F =4:1) had perforation (7). The explanation for this observation, however, remains unclear.
None of the infants in this study had enteric perforation. This is consistent with previous observation that enteric perforation is rare in infancy: with reported rate of less than 1% in many studies (3, 4). Perhaps their poor immunological state may be responsible for this. The older children possibly would have had multiple exposures to Salmonella typhi organisms over time. Although, significantly higher proportion of our cases where school aged children, (p =0.020), when further analyzed as independent risk factors for perforation, the factor was not significant. This contrast with the finding by Bulter et al, who concluded that older age is a significant risk factor to intestinal perforation (11).

Clinical features such as high grade fever, abdominal pain and hepatomegaly were common among children with typhoid fever; either with or without enteric perforation. This agrees with previous studies (1, 3, 5, 7). Rebound tenderness which indicate peritoneal irritation from soilage, was seen in about one-third (36.2%) of the children without radiological evidence of enteric perforation. These patients could have had minimal perforation.

Inadequate treatment prior to admission in our hospital independently predicted perforation in the children studied. If adequate and prompt treatment has been sought or initiated at the referral center; perhaps, some of these children would not have developed intestinal perforation. It has been reported that the timing, dosage and duration of antimicrobial therapy in typhoid fever are important in limiting morbidities such as intestinal bleeding and perforation (12). They must be commenced early following outset of symptoms, at appropriate dose for adequate period. It is however worrisome that in most parts of the developing countries, delay presentation as well as antibiotics abuse and misuse still predominates.

The causes of delayed presentation of typhoid fever in third world countries are due to inadequate health seeking behavior (13) and the presence of endemic malaria infection which is clinically similar to typhoid fever especially in the early stages. Inadequate therapy can also lead to emergence of multidrug resistant strains of Salmonella typhi, which may cause atypical presentation (14).

A short duration of symptoms was also found to predict perforation. In this study, the mean duration of symptoms in cases was significantly shorter than that of the control. This is similar findings by Khan et al. and supports the hypothesis that the disease pathogenesis in children with typhoid perforation is fulminant (15). The damage in the Payer’s patches, which is associated with the inflammatory response of the host as well as the virulence of the organisms, is associated with intestinal ulceration, haemorrhage, necrosis and perforation (16).

The findings of neutrophilia and elevated ESR as predictors of enteric perforation are consistent with several previous studies, which reported that leucopenia is more common in patients with uncomplicated typhoid fever, while leukocytosis and neutrophilia are more common in those with intestinal perforation or cholecystitis (4).
CONCLUSION

This study, although retrospective in nature, has attempted to outline those factors that predict typhoid ileal perforation in children. This will ultimately help in recognition of high-risk cases and drawing up of screening tool to facilitate effective and prompt management.

ACKNOWLEDGEMENTS

We are grateful to all those who assisted us during the presentation of this paper. We also acknowledge with thanks, all our colleagues who were involved in the management of these children.

REFERENCES:


CANDIDAL SEPTICEMIA FOLLOWING INTRAVENOUS IMMUNOGLOBULIN

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ABSTRACT

Intravenous immunoglobulin (IVIG) is used in various autoimmune disorders and is the agent of choice in the management of Guillain Barre Syndrome. Review of literature shows association of viral and bacterial infections with the use of IVIG and in this paper we describe a case of fungal septicemia that occurred after treatment with IVIG.

KEYWORDS: Fungal sepsis, Intravenous immunoglobulin, Candidal Septicemia

INTRODUCTION

Guillain-Barre syndrome (GBS) is an acute, demyelinating polyneuropathy involving the spinal roots, peripheral nerves, and often the cranial nerves due to segmental destruction from a lymphocyte-mediated autoimmune reaction. Intravenous immunoglobulin (IVIG) is the agent of choice along with other supportive measures. Adverse reactions to intravenous immune globulin occur in less than 5 percent of patients [1]. Some of the reported side effects of IVIG include fever, myalgia, headache, nausea, vomiting, aseptic meningitis, neutropenia, hypertension, numbness, tingling, dizziness, anaphylaxis, thrombosis, Parvovirus B19 and hepatitis C infections (transmitted through the immunoglobulin products), cutaneous vasculitis, aseptic meningitis, sepsis and viral infection [2]. We here describe a case of candidal sepsis in association with IVIG in a patient who developed GBS following malaria. This association, based on our literature review in MEDLINE, has not been reported previously.

DESCRIPTION OF THE CASE REPORT

A 42 year old male was admitted for malaria in another hospital and was being treated with antimalarials developed weakness of all the four limbs associated with giddiness and loss of balance. The weakness progressed, patient developed bulbar and respiratory muscle weakness requiring intubation and mechanical ventilation. On transfer to our hospital, he had a power of 2/5 and 3/5 in both the upper and lower limbs respectively, bifacial, bulbar and respiratory weakness and was afebrile. MRI brain was normal and nerve conduction study was suggestive of severe demyelinating polyneuropathy. He was administered injection IVIG 25 grams IV daily
(0.4 g/kg/day) for 5 days with injection artesunate 120 mg IV once a day and injection heparin 5000 units subcutaneous twice a day.

Injection piperacillin and tazobactum 4.5 grams IV thrice a day was added for purulent respiratory secretions and leucocytosis. On day 3 of admission the patient developed fever of 38.4 degree C and the antibiotic was changed to injection imipenem with cilastatin 1 g IV four times a day and vancomycin 1 gram IV twice a day. Bronchoalveolar lavage (BAL) had shown a mixed growth of Acinetobacter sensitive to imipenem and Klebsiella species sensitive to polymyxin B and colistin and resistant to imipenem. Patient’s fever persisted (>38.4 degree C) and hence on day 7, imipenem and vancomycin were stopped and the patient was started on injection colistimethate sodium 2 MIU intravenously every 8 hourly.

However, fever continued and on day 13 of admission, his sample for BAL and two blood samples for fungal cultures that were sent on day 9 of admission revealed budding yeast cells and candidal species. He was started on injection amphotericin B 40 mg IV once a day after confirming the candidal growth with the repeat blood culture and after 48 hours of amphotericin B initiation, the patient became afebrile. He was given a total of 2 grams of amphotericin over 20 days and subsequent blood cultures were negative for candida.

DISCUSSION

In tropical countries, GBS has been described in literature as a very rare complication following falciparum malaria. The possible mechanism may be the damage of peripheral nerves due to the vascular occlusion by malarial parasite, causing anoxaemic stagnation in the vasa nervosum leading to temporary demyelination [3]. In recent years, IVIG has become standard treatment for GBS because of ease of administration and a comparatively better side-effect profile than plasmapharesis. The beneficial effects of IVIG in GBS are attributed to multiple, mutually nonexclusive mechanisms that include modulation of Fc receptor expression and function, interference with activation of complement and the cytokine network including chemokines, regulation of cell growth, and the effects on the activation and effector functions of dendritic cells, macrophages, natural killer (NK) cells, and T and B cells and suppression of immunoglobulin production of B lymphocytes [3-8].

Chemotactic factors produced by a variety of cells, including leukocytes, epithelial cells, endothelial cells, fibroblasts and smooth muscle cells following stimulation by cytokines or microbial products and phagocytic activity of neutrophils are the primary effector mechanism in preventing infection by candida albicans and aspergillus fumigates [9]. Although intensive care unit (ICU) stay of more than 20 days, prolonged administration of broad spectrum antibiotics and immunosuppressive states are risk factors for candidal infection, our patient had a short stay of 8 days prior to the development of candidal infection, was otherwise immunocompetent, had no evidence of sepsis on admission (serum procalcitonin levels were normal) and was persistently febrile despite being administered antibiotics according to culture and sensitivity report. Hence candidaemia as a complication of ICU stay or broad spectrum antibiotics administration is unlikely.
Causality assessment for the likelihood of candidal septicemia with IVIG in this patient was performed with Naranjo scale [10] and a score was 3, suggestive of a possible association was obtained. The probable mechanism for the development of candidal septicemia in this patient may be the decrease in production of chemotactic factors by lymphocytes and reduced phagocytic function of neutrophils. Although WBC count may be within the normal range, their functions may be altered due to the possible immunosuppression by IVIG. Fungal sepsis should be considered (and ruled out by cultures) in the differential diagnosis of fever and sepsis post IVIG.

REFERENCES:


INTRODUCTION

In 1976, Parks, Gordon and Hardcastle published their article entitled ‘A classification of Fistula- in ano.’ Their classification was based on the identification of four types of fistula: inter sphincteric, trans sphincteric, supra sphincteric and extra sphincteric. An intersphincteric fistula runs downwards between the internal and external sphincters. The trans sphincteric fistula runs from the intersphincteric space, through the external anal sphincter into the ischiorectal space. The supra sphincteric fistula runs upward between the internal sphincter and external sphincter and then bends around the pubo rectalis muscle and penetrates the pelvic floor, to traverse downwards through the ischiorectal fossa.

An extra sphincteric fistula passes through the external anal sphincter and then branches out into two tracks- one extending cephalad penetrating the pelvic floor and finally ending in rectum and the other extending caudally ending in the external opening. Although this classification does not take into account the circumferential extent of the disease it is widely used because of its simplicity. Another reason is that this classification relates the anatomical relation of the fistulous track to the anal sphincters which is relevant for the choice of treatment.

KEYWORDS: Fistula, Pre Surgical, Sphincteric Fistula, Fecal, Fistulography

SURGICAL APPROACHES

Surgical management of perianal fistulae depends on the nature of the primary fistula and any secondary fistulous tracks or associated abscesses. For simple intersphincteric fistulae, the surgeon performs a fistulotomy or fistulectomy, in which the internal opening is divided to lay open the track. Alternatively in patients with perianal abscesses, the surgeon performs a simple incision and drainage first.

Preservation of fecal continence is the most important surgical concern and the treatment strategies aim to preserve the integrity of the external sphincter. It is the right balance between eradication of infection and preservation of function that is the art of fistula surgery. To achieve this, two surgical questions need to be answered preoperatively: (a) What is the relationship between the fistula and the anal sphincter (i.e., can the tract be safely laid open with only a low risk of postoperative incontinence), and (b) are there any extensions from the primary tract that
need to be treated to prevent recurrence, and, if so, where are they? The key to solving these questions is accurate pre-operative assessment.

PRE-OPERATIVE ASSESSMENT

INSPECTION

The location of the external opening provides important information regarding the type of fistula. Usually the external opening of an intersphincteric fistula is located near the anal canal whereas the distance between the external opening of a trans-sphincteric fistula and the anal verge is several centimeters or more.

GOODSALL’S RULE

Goodsall, in the early 20th century described the relationship of the cutaneous opening to the expected site of the enteric opening. The rule states that the cutaneous opening anterior to the transverse anal line are associated with direct radial fistulous track into the anal canal whereas openings posterior to the line have tracks that enter the canal at midline posteriorly. Recently several studies have cast doubts about the reliability of this rule.

PREOPERATIVE IMAGING OF FISTULA IN ANO

CONVENTIONAL FISTULOGRAPHY

Contrast material–enhanced fistulography was the first radiological modality to be used in imaging of fistula in ano. In fistulography, the external opening is catheterized with a fine cannula, and a water-soluble contrast agent is injected gently to define the fistula tract.

Unfortunately, fistulography has two major drawbacks. First, extensions from the primary tract may fail to fill with contrast material if they are plugged with debris, are very remote, or there is excessive contrast material reflux from either the internal or external opening.

Second, the sphincter muscles themselves are not directly imaged, which means that the relationship between any tract and the sphincter must be guessed. Furthermore, an inability to visualize the levator plate means that it can be difficult to decide whether an extension has a supra- or an infralevator location. Similarly, the exact level of the internal opening in the anal canal is often impossible to determine with sufficient accuracy to help the surgeon. The net result is that fistulographic findings are both difficult to interpret and unreliable.
Very little has been written on fistulography for fistula in ano. Kuijpers and Schulpen attempted to determine its value by retrospectively reviewing fistulographic images in 25 patients. The authors based on this concluded that fistulography was "inaccurate and unreliable," although they admitted prior bias against the technique. In contrast, Weisman and co-workers found fistulography to be more useful, in that it provided helpful information in nearly half of the 27 subjects in their study.

**ANAL ENDOSONOGRAPHY**

Anal endosonography, developed by Clive Bartram, was the first technique to directly depict the anal sphincter complex in detail. The technique has attracted considerable attention because of its ability to demonstrate the presence and extent of anal sphincter disruption, notably after vaginal delivery. Anal endosonography has also been extensively used for the preoperative classification of fistula in ano.

The examination is simple, rapid, and well tolerated by patients. The patient lies in the left lateral position or in the prone position if female. The probe is gently inserted into the distal rectum and then withdrawn through the anal canal. The internal sphincter is visualized as a hypoechoic ring encircling the anal canal, whereas the external sphincter is of mixed echogenicity. The intersphincteric space and longitudinal muscle lie between these and are of mixed echogenicity and are easily identified by using modern 10-MHz transducers.

Endosonography is particularly well suited to identification of the internal opening, because this opening is usually positioned right at the probe surface. It is important to realize, however, that a tract extending up to the anal mucosal surface is rarely seen. Although a breach in the subepithelial layer of the anal canal is occasionally present, it is more common for the position of the internal opening to be revealed as a hypoechoic focus in the intersphincteric space that abuts the internal sphincter, often with a small corresponding defect in the internal sphincter. Because intersphincteric fistulae do not stray beyond the intersphincteric space, they are usually very well visualized at anal endosonography. Trans sphincteric fistulae are revealed by tracts that cross the external sphincter to reach the ischioanal fossa. As would be expected, extensions are revealed as hypoechoic fluid collections.

**TRANSPERINEAL SONOGRAPHY (TPUS)**

Rubens et al described TPUS as a valuable tool for imaging perianal inflammatory disease. Stewart et al described TPUS using a combination of transvaginal and transperineal approaches in female patients and transperineal ultrasonography in male patients to detect perianal fistulae and abscesses. In a recent study, Mallouhi et al showed a high correlation between perineal ultrasonographic findings and surgical examination.

TPUS has the potential to become the initial and most cost-effective investigation for fistula disease, which may alleviate the need for MRI in most patients. Its advantages are as follows: It
has excellent detection rates of primary and secondary tracts and their course and extent, even in blocked tracts, which cannot be evaluated by fistulography. The levator ani and external sphincter can be evaluated well. Muscle mobility can also be judged. The suprasphincteric type can be identified easily. It allows good detection of perianal abscesses.

Air in the fistula tract and increased vascularity are reliable signs of an active fistula. It can be performed in patients with anal stenosis (Endoanal ultrasonography cannot be performed in these patients.) It allows real-time visualization (which computed tomography and MRI lack). It has multiplanar capability. It can be used intraoperatively to delineate the tracts. No specialized equipment is needed. It is inexpensive and readily available especially when immediate action is necessary. It allows rapid evaluation, is easily reproducible, and is easy to perform. It is painless and an ideal tool for follow-up cases with no patient preparation requirement 14.

**MR IMAGING OF FISTULA IN ANO**

The ability of MR imaging helps to accurately classify tracts and also identify disease that could have been missed. It has effect on surgical treatment and patient outcome.

**ST JAMES’S UNIVERSITY HOSPITAL MODIFICATION OF PARKS CLASSIFICATION FOR FISTULA IN ANO**

Parks et al described the course and relationship of perianal fistulae to the sphincter mechanism with reference to the coronal plane. St James’s university classification is a modification of Parks’s classification. It consists of five grades and relates the Parks surgical classification of anatomy seen at MR imaging in both axial and coronal planes. This classification deals with not only the demonstration of primary fistulous tracks but also with secondary ramifications and associated abscesses. This system has been validated with surgical proof and has been shown to correlate better than initial surgical assessment with long-term outcome.

**Grade 1: Simple Linear Intersphincteric Fistula:** - In a simple linear intersphincteric fistula, the fistulous track extends from the skin of the perineum or natal cleft to the anal canal, and the ischiorectal and ischioanal fossae are clear. There is no ramification of the track within the sphincter complex. The enhancing track is seen in the plane between the sphincters and is entirely confined by the external sphincter. Fistulous tracks arising behind the transverse anal line, which are by far the most common type, enter the anal canal in the midline posteriorly

**Grade 2: Intersphincteric Fistula with Abscess or Secondary Track:** - Intersphincteric fistulae with an abscess or secondary track are also bounded by the external sphincter. Secondary fistulous tracks may be of the horseshoe type, crossing the midline, or they may ramify in the ipsilateral intersphincteric plane. On T2-weighted images, pus has high signal intensity and thus cannot be reliably distinguished from edema and inflammation, but gas within abscesses has low signal similar to that of the anorectal lumen 4. Intersphincteric abscesses and secondary fistulous
tracks are well shown by dynamic contrast-enhanced MR imaging. On these contrast-enhanced images, the pus in the central cavity has low signal intensity and is surrounded by a brightly enhancing rim. A horseshoe fistula, in which the process extends to the opposite side, is best demonstrated in the axial plane.

**Grade 3: Trans-sphincteric Fistula:** Instead of tracking down the inter sphincteric plane to the skin, the trans-sphincteric fistula pierces through both layers of the sphincter complex and then arcs down to the skin through the ischiorectal and ischioanal fossae. Thus, a transsphincteric fistula may disrupt the normal fat of the ischiorectal and ischioanal fossae with secondary edema and hyperemia. These fistulae are distinguished by the site of the enteric entry point in the middle third of the anal canal (i.e., corresponding to the position of the dentate line), as seen on coronal images. Because these fistulae disrupt the integrity of the sphincter mechanism, their tracks must be excised by dividing both layers of the sphincter, thus risking fecal incontinence.

**Grade 4: Trans-sphincteric Fistula with Abscess or Secondary Track within the Ischiorectal Fossa** - A trans-sphincteric fistula can be complicated by sepsis in the ischiorectal or ischioanal fossa. Such an abscess may manifest as an expansion along the primary track or as a structure distorting or filling the ischiorectal fossa. Axial and coronal dynamic contrast-enhanced MR imaging clearly depicts a trans-sphincteric abscess. As with grade 3 lesions, the key anatomic discriminator of a grade 4 fistula is the track crossing the external sphincter.

**Grade 5: Supralevator and Translevator Disease:** In rare cases, perianal fistulous disease extends above the insertion of the levator ani muscle. Suprasphincteric fistulae extend upward in the intersphincteric plane and over the top of the levator ani to pierce downward through the ischiorectal fossa. Extrasphincteric fistulae reflect extension of primary pelvic disease down through the levator plate. Coronal dynamic contrast-enhanced MR imaging elegantly demonstrates breaches of the levator plate, which is clearly shown in this plane. In some translevator fistulae, horseshoe ramifications to the contralateral side may occur.

**EFFECT OF PREOPERATIVE MRI ON SURGERY AND OUTCOME**

MRI, has revolutionized the treatment of patients as it can be used to classify fistulae preoperatively with high accuracy and also alert the surgeon of underlying disease. Spencer and colleagues independently classified 37 patients into those with simple or those with complex fistulae on the basis of MR imaging and EUA and found that MR results were the better predictor of outcome, with positive and negative predictive values, respectively, of 73% and 87% for MR and 57% and 64% for EUA.

Beets-Tan and colleagues extended this hypothesis by investigating the therapeutic effect of preoperative MR imaging; MR imaging provided important additional information that precipitated further surgery in 12 (21%) of 56 patients, predominantly in those with recurrent fistula or Crohn disease.
Buchanan and co-workers hypothesized that the therapeutic influence and, thus, beneficial effect of preoperative MR imaging would be greatest in patients with recurrent fistula, since these patients had the greatest chance of harboring occult infection, while such fistulae were also the most difficult to evaluate clinically. They found that postoperative recurrence was only 16% for surgeons who always acted if MR findings suggested that areas of infection had been missed, whereas recurrence was 57% for those surgeons who instead always chose to ignore imaging results.

Ever since the results of Lunniss et al suggested that EUA might be an imperfect reference standard with which to judge MR imaging, it is now well recognized that surgical findings at EUA are often incorrect with frequent false-negatives. In a recent comparative study of endosonography, MR imaging, and EUA in 34 patients with fistula due to Crohn disease, Schwartz and co-workers found that a combination of the results of at least two modalities was necessary to arrive at a correct classification. Spencer and colleagues independently classified 37 patients into those with simple or those with complex fistulae on the basis of MR imaging and EUA and found that MR results were the better predictor of outcome, with positive and negative predictive values, respectively, of 73% and 87% for MR and 57% and 64% for EUA.

Beets-Tan and colleagues extended this hypothesis by investigating the therapeutic effect of preoperative MR imaging; the MR imaging findings in 56 patients were revealed to the surgeon after he or she had completed an initial EUA. MR imaging provided important additional information that precipitated further surgery in 12 (21%) of 56 patients, predominantly in those with recurrent fistula or Crohn disease.

Buchanan and co-workers hypothesized that the therapeutic influence and, thus, beneficial effect of preoperative MR imaging would be greatest in patients with recurrent fistula, since these patients had the greatest chance of harboring occult infection, while such fistulae were also the most difficult to evaluate clinically. They found that postoperative recurrence was only 16% for surgeons who always acted if MR findings suggested that areas of infection had been missed, whereas recurrence was 57% for those surgeons who instead always chose to ignore imaging results. Furthermore, in the 16 patients who needed further unplanned surgery, MR initially correctly predicted the site of this disease in all cases.

Ever since the results of Lunniss et al suggested that EUA might be an imperfect reference standard with which to judge MR imaging, comparative studies have been plagued by the lack of a genuine reference standard. In a recent comparative study of endosonography, MR imaging, and EUA in 34 patients with fistula due to Crohn disease, Schwartz and co-workers found that a combination of the results of at least two modalities was necessary to arrive at a correct classification. Indeed, it is well established that many false-negative surgical results will only reveal themselves during long-term clinical follow-up, and, at this point in time, comparative studies that ignore clinical outcome are likely to be seriously flawed.
IMAGING FOR DIFFERENTIAL DIAGNOSIS

Not all cases of perianal sepsis are due to fistula in ano. While clinical examination results are often conclusive, this is not always the case and imaging may help with the differential diagnosis. The cardinal feature of fistula in ano is intersphincteric infection, which is not generally found in other conditions. Whenever imaging suggests that infection is superficial rather than deep seated and that there is no sphincteric involvement, other conditions such as hidradenitis suppurativa should be considered.

The possibility of underlying Crohn’s disease should always be considered in patients who have a particularly complex fistula, especially if the history is relatively short. Small-bowel imaging may be used to search for Crohn’s disease when it is suspected, and the possibility of underlying pelvic disease should be considered in any patient with an extrasphincteric fistula, whether thought due to Crohn’s disease or otherwise.

Pre-operative imaging helps in better delineation and characterization of fistula-in-ano. This in turn helps in preventing recurrences which occur usually due to failure to eradicate all the associated sites of infection. The right balance between eradication of infection and preservation of anal continence is the art of fistula surgery. Pre-operative imaging helps to achieve this goal.

Various imaging modalities have been tried for the preoperative imaging of fistula-in-ano. But MRI proved to be superior in classifying the fistulae, assessing the relation with the sphincter complex, diagnosing supralevator extension and demonstrating the distance of intact sphincter above the level of internal opening, which in turn are of crucial importance to the operating surgeon.

REFERENCES:


THE INFLUENCE OF PHYSICAL ACTIVITY ON THE MORPHOMETRY OF THE HEART OF TRACK AND FIELD ATHLETES

A Case Study by Prof Helen Komar, Belarus
(Lecturer, Department of Anatomy, Belarusian State University of Physical Culture)
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Knowledge of the morphological changes in the hearts of athletes depending on the focus of the training process will allow sports physicians to detect the early stages of myocardial hypertrophy and reduce the risk of deadly forms of cardiac remodeling in athletes.

By establishing a relationship between the focus of the training process of athletes and their hearts’ morphometric parameters the process of left ventricular hypertrophy can be controlled. This relationship has a particular practical importance to optimize the adaptation of the heart to the physical stress and minimize the risk of sudden cardiac death in athletes.

ABSTRACT

Under the influence of physical loads on the body of athletes there occurs an adaptation in accordance with the thrust of the training process. A particular focus of the training process changes and specializes as the morphology and function of the body of an athlete changes. There are peculiarities in the adaptation of an athlete's cardio-vascular system to the specific type of sport activity. Taking into account these peculiarities, one can estimate the intracardiac sizes of the athletes of various sports specializations. The quantitative values of the echocardiographic parameters in athletes of different kinds, establishes the presence of changes in the geometry of the left ventricle of the heart of athletes with various orientations of the training process.

KEYWORDS: Myocardium, Left ventricle, Hypertrophy, Adaptation, Athletes.

INTRODUCTION

In general, no doubt, sports have a positive impact on human health. However, it is the heart of the body which is most often overloaded and over-voltaged. The heart of an athlete might be bigger than that of an untrained person, but no histological changes in its structure are necessary.
The structural changes of the heart in athletes are represented by two processes: hypertrophy and dilatation of its walls. Physiological dilatation and hypertrophy of the heart are of great importance in making athletes perform at high levels [1].

The greatest performance of athletes is due to a specific ratio of the thickness of the ventricular wall to the size of its adjacent cavity [3]. This ensures that the cardiac output reaches such values that allow the athlete to withstand maximum amounts of exercise. Thus there is an increase in the absolute thickness of both right and left chambers of the heart.

Economization of heart function at rest, and maximal heart performance during high intensity workouts are the distinct features that characterize the physiology of an athletic heart [4].

Cardiac hypertrophy of athletes is an adaptive reaction of the central circulatory organ to demanding workload due to systematic training [2]. High performance level of an athlete's heart is thus due to a long-term adaptation of athletes to strenuous physical work.

Myocardial hypertrophy is a change characteristic of high level functionality of the cardiovascular system in athletes. Proper and efficient exercises cause positive cardiovascular morphological changes [4, 5, 6]. Morphological changes characteristic of an athlete's heart are not of pathological nature and depend on the nature of the muscular load, whether it is static or dynamic. Classification of physical activity on the static and dynamic basis is important in determining the various influences on the athlete's body, as the prevalence of one type of loads leads to different effects on the cardiovascular system. However, the classification is also conditional, due to a combination of static and dynamic loads in each sport.

The study involved athletes doing track and field. Track and field is a complex type of sport that involves discipline associated with different motor abilities, as well as combining a variety of patterns of muscular loads. In this connection, track and field can be regarded as a model for many sports.

The question that still has not been decisively answered is how the various kinds of physical activity (high-speed direction, speed–power, endurance) on the morphometric parameters of the heart of athletes engaged in different kinds of athletics. The aim of the study was to determine how those various kinds of physical activity affect the morphometric parameters of the left ventricle (LV) of athletes.

The main research objectives were:

1. Complex study of morphometric parameters of the heart of athletes with sports categories 1- 3 (1 being beginner and 3 pro) and other highly skilled athletes.
2. To examine morphometric changes in the LV of the heart of athletes as a function of the focus of training and to identify groups of athletes with changes in the geometry of their LV.
3. To identify the various adaptive rates of change in the LV’s myocardium of different athletes.

MATERIALS AND METHODS

170 athletes were surveyed who specialize in different kinds of athletics. Of these, a control group (CG) of 70 people was selected (35 men and 35 women), aged 15 to 27 years (mean age – 18.57±2.09 years) with 1-3 sports categories in athletics. The experimental group (EG) included 100 track athletes (52 men and 48 women) of high athletic qualifications (candidate master, master of sport, master of sports of international class) aged 16 to 34 years (mean age – 22.45 ± 3.40 years).

The EG athletes were divided into three groups based on the predominant training target: Group 1 (n=39) – high-speed thrusts; Group 2 (n=41) – speed-power; Group 3 (n=20) endurance.

The study of morphometric parameters of the heart of athletes was conducted using the method of echocardiography. Comparative analysis included the following indicators of heart morphometry: left ventricular end-diastolic diameter (LVDd) and left ventricular end-systolic diameter (LVDs), mm; absolute posterior wall thickness of the left ventricle in diastole (PWTd) and systole (PWTs), mm; interventricular septal thickness in diastole (IVSTd) and systole (IVSTs), mm. In addition, echocardiography determined the left ventricular mass (LVM, g).

From the numerical data obtained the following statistical parameters were calculated: mean (M), standard deviation (σ) and the standard error of the mean (m). When comparing the mean values Mann-Whitney nonparametric statistical tests were used.

RESULTS AND DISCUSSION

The results of statistical processing data revealed the presence of morphometric changes of the LV of the heart in a group of athletes with high qualifications (EG, Table 1).

TABLE 1.

The morphometric parameters of the left ventricular myocardium of the heart of athletes (M±σ)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EG men</th>
<th>EG women</th>
<th>CG men</th>
<th>CG women</th>
</tr>
</thead>
</table>

24
All of the above parameters for the CG athletes normal—and were significantly less than the corresponding parameters of elite athletes (p < 0.05, p<0.01). Improving all the morphometric parameters of the LV in EG compared with CG indicates a significant impact of intense exercise on the morphometric parameters of LV heart failure. Exercise duration affects the increase in morphometric parameters of the LV of athletes. These morphometric changes are an adaptive response of the heart to intense exercise.

Changes in LV morphometry in the three groups of athletes (depending on focus of the training process) of high sports training are shown in Table 2.

**TABLE 2.**

**Echocardiographic parameters of the left ventricular myocardium of the heart (highly qualified athletes (M±σ))**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>men</td>
<td>women</td>
<td>men</td>
</tr>
<tr>
<td></td>
<td>(n=18)</td>
<td>(n=21)</td>
<td>(n=24)</td>
</tr>
<tr>
<td>IVSTd, mm</td>
<td>8,09±0,58</td>
<td>7,59±1,00</td>
<td>8,45±1,07</td>
</tr>
<tr>
<td>IVSTs, mm</td>
<td>11,03±1,51</td>
<td>9,94±1,15</td>
<td>11,40±1,31</td>
</tr>
<tr>
<td>PWTd, mm</td>
<td>8,52±0,59</td>
<td>7,96±1,01</td>
<td>8,90±1,21</td>
</tr>
</tbody>
</table>
The values of the LVDd and LVDs in all experimental groups of athletes had very similar value ranges. Consequently, the focus of the training process has no significant effect on the LV’s diameter.

Group 2 male elite athletes had the highest LVM index (speed-strength oriented training process), and for women it was group 3 (endurance). These 2 focuses of the training process had the greatest impact on the increase in LVM of the heart.

Group 2 highly skilled athletes had the highest values of PWT in the diastole (both men and women). In addition, men belonging to this group had the largest amount of IVSTs. Thus the researchers concluded that physical strength conditioning increases in the thickness of LV’s walls. Configuration of heart cavities remained unchanged.

Experimental group 3 (both men and women) showed maximum IVST in diastole and PWT in systole. Athletics with a predominance of physical activity was most pronounced signs of myocardial hypertrophy of the LV of the heart. Athletes specializing in long-term endurance work had a tendency for a linear increase in heart size.

All morphometric parameters had the lowest values in group 1 (with speed oriented workouts) elite athletes.

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWTs, mm</td>
<td>14,81±1,41</td>
<td>14,11±1,88*</td>
<td>15,39±1,42</td>
<td>14,09±1,31</td>
<td>15,55±0,84</td>
</tr>
<tr>
<td>LVDd, mm</td>
<td>50,06±2,94</td>
<td>45,24±4,16</td>
<td>50,58±5,12</td>
<td>45,29±4,18</td>
<td>49,20±5,29</td>
</tr>
<tr>
<td>LVDs, mm</td>
<td>33,39±3,48</td>
<td>30,33±3,58</td>
<td>33,71±4,94</td>
<td>30,24±3,19</td>
<td>32,50±3,57*</td>
</tr>
<tr>
<td>LVM, g</td>
<td>185,67±20,6</td>
<td>151,80±32,76*</td>
<td>209,06±62,6</td>
<td>156,54±37,4</td>
<td>199,71±33,18*</td>
</tr>
</tbody>
</table>

* p<0.05; ** p<0.01.

CONCLUSION

Adaptations occur in the body of athletes in accordance with the training process. Particular targeting of the training process changes the morphology and function of an athlete’s heart.

The set of professional-sports factors (sport, training process efficiency, duration and intensity of training) have an impact on the prevalence of certain LV geometry and on the characteristics of its remodeling. Genetic factors are also important.
Analysis of the data allowed us the researchers to: 1) identify the features of adaptation of the cardiovascular system of athletes for a specific type of sports, 2) to determine the quantitative values of echocardiographic parameters for athletes specializing in different kinds of athletics, 3) to establish the presence of changes in the geometry of the left ventricle in athletes with different orientation of the training process, 4) to evaluate the intracardiac dimensions in athletes of various sports specializations.

Further studies in those groups of athletes that had altered left ventricular geometry will determine the specific type of left ventricular hypertrophy of the heart, depending on the focus of the training process.

REFERENCES


ROLE OF ULTRASOUND IN TESTICULAR AND SCROTAL TRAUMA

A Case Study by Dr Vikash Kumar Bhojasiya, India
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ABSTRACT

Testis is the superficial structure and scrotum has thin skin and subcutaneous tissue. This makes the evaluation of the testis by ultrasound very accurate and effective. However, high frequency to be used for evaluation of such structures to get best resolution. This article was mainly describing the role of the high frequency ultrasound for testicular trauma. This can find out and depict very nicely even the minute quantity of fluid (less than 1cc). It can pick a tiny lesion as small as 2-3mm. Hence any traumatic rupture, hemorrhage, collection, contusion, parenchymal changes can be diagnosed with 100% accuracy. The use of doppler along with the imaging increases its sensitivity, particularly in finding out the infarctions and mass lesions. Ultrasound not only has role in diagnosis, but also helps in management of such cases to evaluate the response of the treatment.

KEYWORDS: Ultrasound, Testicular, Scrotal Trauma, Acute scrotal pain

INTRODUCTION

This review critically analyze the article Role of Ultrasound in Testicular and Scrotal Trauma, Radiographics 2008; 28:1617–1629 • Published online 10.1148/rg.286085507. This is a review of each and every step by step research done of particular topic to evaluated the role of ultrasound. From the beginning it reviews the abstract to the conclusion in end. During this process we had particular directions and criteria for evaluating the efficacy and credibility of the article. After reading the article, we will commenting the pitfalls and drawbacks as well. It has put sincere efforts in the evaluation of the accuracy and authority of the article. Overall the article was well written, clear and relevant.

REVIEW OF LITERATURE

Testicular trauma is the third most common cause of acute scrotal pain, and high-frequency ultrasonography (US) with a linear-array transducer is the modality of first choice for the evaluation of testicular trauma. The need for US is further underscored because the clinical
manifestations are not always correlative to or reliably indicative of testicular injuries. US findings may vary from a small hematocele requiring conservative management to a testicular rupture demanding immediate surgical intervention. US therefore is helpful in the triage of patients for surgical or nonsurgical management.

Testicular torsion was first described by Delasiauve in 1840. It was not widely regarded as a significant problem until 1907, when Rigby and Russell published their work on torsion of the testis in Lancet. The first description of neonatal torsion was described by Taylor in 1897. Subsequently, Colt reported torsion of the appendix testis in 1922.

ANATOMY OF THE SCROTUM AND TESTS

Each hemiscrotum contains a testis with its coverings, epididymis, and spermatic cord. The tunica albuginea, with its great tensile strength, plays a significant role in protecting the testis from trauma. It can sustain a force of as much as 50 kg without rupturing.

US TECHNIQUE

Scrotal US is performed with the patient lying in a supine position and with the scrotum supported by a towel placed between the thighs. The use of a 7–14-MHz high-frequency linear-array transducer is preferred. After trauma, the scrotum is often tender to the touch, which makes scanning difficult. An attempt should be made to evaluate both testes and epididymides in their entirety and to identify any extratesticular collections.

MECHANISMS OF INJURY

Sporting activities account for more than half of all cases of testicular injury, and motor vehicle accidents account for another 9%–17% of testicular injuries. The three main categories of injury to the scrotum are blunt injuries, penetrating injuries, and iatrogenic injuries.

US FINDINGS

- Testicular Rupture - Disruption of the Tunica Albuginea; Contour Abnormality of the Testis; Absence of Vascularity in the Testis Heterogeneous Echotexture of the Testis.
- Testicular Fracture
- Testicular Dislocation
- Testicular Torsion
- Intratesticular Hematoma
- Intratesticular Pseudoaneurysm
- Penetrating Injury
- Extratesticular Injuries; Hematoma (Hematocele); Scrotal Wall Hematoma; Traumatic Epididymitis
ARTICLE SUMMARY

The purpose of this article is to get complete knowledge and understanding of all kind of injuries in testis and extratesticular area. The fact that ultrasound has profound role in diagnosis and management acute scrotal pain and evaluation of the traumatic scrotum.

High-frequency US performed with a linear array transducer helps identify both the normal tunica albuginea and its rupture with greater ease. The amount of swelling and ecchymosis may vary, and the degree of hematoma does not necessarily correlate with the severity of testicular injury. The absence of external signs does not entirely rule out a testicular rupture; a contusion without a fracture of the tunica albuginea may be accompanied by significant bleeding that requires surgical intervention. Early surgical exploration is important in patients with negative US findings of testicular injury when there is a high risk or a high degree of suspicion—for example, in patients who have undergone trauma involving high-energy transfer mechanisms.

ARTICLE STRUCTURE

The article was introduced with an abstract, which provided the base developed by the article as well as a brief overview of main points. Then it gives information about the anatomy of scrotum and testes, followed by ultrasound technique. The way of describing the mechanism of injury gives in-depth knowledge of the pathology. Each ultrasound findings were described in detail which includes testicular rupture to torsion and various other findings. The article also mentions and gives importance the extratesticular findings and some rare findings which completes the article The summary was made at the end of the article; although short but it made a complete sense and solves the objective of the article. References were cited in-text and set out clearly in the literature cited section.

ARTICLE CRITIQUE

Authority

*RadioGraphics*, a bimonthly journal devoted to continuing medical education in radiology, is owned and published by the Radiological Society of North America, Inc (RSNA). This journal being freely accessible all over the world in internet had made a strong base of study for all medical faculty. The journal is abstracted and indexed in MEDLINE/PubMed.

The author’s credibility was established in a number of ways. These included their MD; the fact that the article was a peer reviewed article; the fact that the article is sited by many other similar articles. Author is an academician and presented many articles in various international
journals. The fact that they are recipient of a Certificate of Merit award for an education exhibit at the 2007 RSNA Annual Meeting.

Accuracy

The information presented in the article was very delicately linked to many referenced, wherein required. Author has put forwards the pictures taken from his own study and it clearly demonstrates the accuracy of diagnosis. Each picture was appropriately labelled and informed about the details. It gives a detailed information about the imaging findings for every lesion in the traumatic testicular or extratesticular region.

Currency

The article was received in February 4, 2008; revision requested March 16 and received March 31; accepted April 7. It was published online in 2008 October. The research it describes was current and the article cites up-to-date references in the body of the text (ranging from 1990-2008). Therefore the article is current.

Relevance

This article gives a very good information about the testicular and extratesticular findings. All the pictures are very clear and self explanatory. Title below the images clearly mentions the relevance. All the headings and subheadings are nicely written. Anatomy of the testis was also very useful data for all. Hence the article is one of the best informative source for all the medical fraternity.

Objectivity

The objective of this article was to give up to date knowledge about various scrotal pathologies occurring as a result of trauma. The article has described each and every topic in a very clear manner and illustrate the images accordingly. The information conveyed is well supported with various research articles and reference was given at appropriate places. There was no evidence of bias. There was complete description of mechanism of injury to happen and cause scrotal pathologies. With the help of images and tables the objective of the article is fulfilled.

Stability

The article, with its source an academic journal on an academic data base is stable as a resource.
ANALYSIS OF GRAPH/IMAGE/TABLE

The study had put a table and many images at appropriate places. The image quality was perfect to understand. The label was clearly mentioned in the images. All images are self explanatory. The table gives a spot summary of US findings and management of testicular and extratesticular Injuries from scrotal trauma.

Figure 1 - Normal mediastinum testis. Longitudinal gray-scale US image of a normal testis shows a linear echogenic structure (arrow) along the long axis of the testis.

Figure 2 - Normal tunica albuginea. Longitudinal gray-scale US image of a normal testis depicts a thin echogenic line (arrow) around the testis.

Recent Advances Related to the Topic

High frequency ultrasound with color doppler is the current modality of the investigation for all types of scrotal pathologies. However, CT or MRI can also be used for evaluation in the certain cases. Despite the high cost and limited availability, magnetic resonance imaging with the dynamic contrast-enhanced subtraction technique provides accurate information on morphology as well as blood flow. Infrared scrotal thermography increases accuracy in the diagnosis of varicocele.
Figure 3 - Longitudinal gray-scale US image of the right testis in a patient with scrotal trauma shows localized disruption of the tunica albuginea (arrows) with associated contour abnormality (arrowheads) and heterogeneous echotexture of the testicular parenchyma

Figure 4 - Color Doppler US image depicts an absence of vascularity in the extruded lower pole of the testis. Surgical débridement of the inferior pole was performed with salvage of the uninjured part of the testis
Figure 5 – Testicular rupture. Longitudinal color Doppler US image of the right testis in a patient with more severe scrotal trauma shows complete disruption of the tunica albuginea with testicular contour abnormality (arrowheads) and no vascularity. The contralateral testis (not shown) also was ruptured. A bilateral orchiectomy was performed.

CONCLUSION

This review has both summarized and critically reviewed article ‘Role of Ultrasound in Testicular and Scrotal Trauma’. The content, structure, strengths and limitations of the article were analyzed and critiqued. The article has contributed to the literature in terms of its valuable critique of current research study on severity of the acute scrotum due to trauma. Prognosis of acute scrotum can be depicted by ultrasound and doppler evaluation. Scrotal trauma calls for careful physical and imaging evaluations to determine the appropriate management of injuries. US is the modality of choice for imaging of scrotal trauma because it allows reliable identification of various testicular and extratesticular injuries. The management options, like the US findings, vary according to the type of injury. Testicular rupture, the most severe testicular injury, requires immediate surgical intervention to salvage the testis.

SOURCE

http://radiographics.rsna.org/content/28/6/1617.full.pdf+html
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STATINS FOR THE PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE

A Case Study by Dr. Ashish Kumar Maurya, India
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ABSTRACT

Reducing high blood cholesterol, a risk factor for cardiovascular disease (CVD) in people with and without a past history of CVD is an important goal of pharmacotherapy. Statins are the first-choice agents. Previous reviews of the effects of statins have highlighted their benefits in people with CVD. The case for primary prevention was uncertain when the last version of this review was published (2011) and in light of new data an update of this review is required.

KEYWORDS: Cardiovascular Disease, Cholesterol, Statins

INTRODUCTION

Reducing high blood cholesterol, a risk factor for cardiovascular disease (CVD) events in people with and without a past history of CVD is an important goal of pharmacotherapy. Statins are the first-choice agents. Previous reviews of the effects of statins have highlighted their benefits in people with CVD. The case for primary prevention was uncertain when the last version of this review was published (2011) and in light of new data an update of this review is required.

OBJECTIVE

To assess the effects, both harms and benefits, of statins in people with no history of CVD.

SELECTION, METHOD AND CRITERIA

To avoid duplication of effort, we checked reference lists of previous systematic reviews. The searches conducted in 2007 were updated in January 2012. We searched the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library (2022, Issue 4), MEDLINE OVID (1950 to December Week 4 2011) and EMBASE OVID (1980 to 2012 Week 1). There were no language restrictions.
We included randomized controlled trials of statins versus placebo or usual case control with minimum treatment duration of one year and follow-up of six months, in adults with no restrictions on type of cholesterol - total, low density lipoprotein (LDL) or high density lipoprotein (HDL) cholesterol levels. Of these 10% or less had a history of CVD.

**BODY**

Cardiovascular disease (CVD) encompasses a wide range of disease including coronary heart disease (eg. heart attack, angina), cerebrovascular disease (ischaemic and haemorrhagic stroke), raised blood pressure, hypertension, rheumatic heart disease and heart failure. In the context of this review the major causes of CVD are unhealthy diets, tobacco use and physical inactivity (WHO 2008).

CVD is ranked as the number one cause of mortality and is a major cause of morbidity world-wide accounting for 17 million deaths i.e 30% of total deaths. Of these, 7.6 million are due to heart attacks and 5.7 million due to stroke (WHO 2008). Over 80% of CVD deaths occur in low- and middle-income countries (WHO 2008). In developing countries, it causes twice a many deaths as HIV, malaria and tuberculosis combined (Gaziano 2007). It has been estimated that between 1990 and 2020, the increase in ischaemic heart disease alone will increase by 29% in men and 48% in women in developed countries and by 120% in women and 127% in men in developing countries (Yusuf 2001). CVD imposes high social costs, including impaired quality of life and reduced economic activity and accounts for a large share of health service resources (Gaziano 2007).

CVD is multi-factorial in its causation and lifestyle changes are the basis of any treatment strategy, with patients often requiring behavioral counseling. Those unable to achieve or maintain adequate risk reduction through lifestyle changes alone or those at high risk may benefit from pharmacotherapy. High blood cholesterol (hypercholesterolaemia) is a risk factor for both fatal and non-fatal CVD events in people with and without a past history of CVD (Prospective Studies Collaboration 2007), and lowering cholesterol, in particular low density lipoprotein (LDL) cholesterol, is an important target of pharmacotherapy. Statins are the first-choice agents for LDL cholesterol reduction.

Since the relation between blood cholesterol and cardiovascular risk is continuous (Chen 1991), there is no definite threshold to initiate treatment. If a threshold for 'high' cholesterol is set at over 3.8 mmol/L, (146.9 mg/dL) this would contribute 4.4 million deaths worldwide and 40.4 million disability-adjusted life years (DALYs) (Ezzati 2002). Furthermore, the average level of blood cholesterol within a population is an important determinant of the CVD risk of the population. Differences in average levels of blood cholesterol between populations is largely determined by differences in diet eg countries with higher dietary saturated fat intake and a lower ratio of polyunsaturated to saturated fatty acids have higher than average cholesterol levels (Davey Smith 1992).
CONCLUSION

Implications for practice

The totality of evidence now supports the benefits of statins for primary prevention. The individual patient data meta-analysis now provide strong evidence to support their use in people at low risk of cardiovascular disease. Further cost-effectiveness analysis are needed to guide widening their use to these low risk groups.

Implications for research

In addition to the cost-effectiveness analysis referred above, it will be useful to study the effects of public health interventions that attempt to alter diet and physical activity patterns and compare their effects with statins in robust randomized trials. This is based on the recent evidence of large independent survival benefits of physical fitness in those taking statins in a large prospective cohort study (Kokkinos 2012).

Relevant interventions might include nutrition education, exercise prescription, physical education curriculums that may be effective in changing lifestyle behaviors. (Jepson 2000) Studies of patient experiences and views on long-term use of statins are also needed to improve adherence to treatment. It is likely that further trials will be conducted in younger adults with adverse risk factor profiles which are associated with higher lifetime CVD risk (Berry 2012) and also in children (de Ferranti 2008). It is important that these trials examine comprehensively potential adverse effects of statins and quality of life, reporting on them in an unbiased way.

ACKNOWLEDGEMENTS

I am thankful to my mentor Dr.JP Singh for his support and guidance in writing this article review, along with them my friend Dr.Rakhi, Dr.Nitin. Dr.Jeetentra, for their constant support and guide.
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ANALYSIS OF LITERATURE SIGNIFYING IMPORTANCE OF UMBILICAL CORD COILING INDEX ON PERINATAL OUTCOME

A Case Study by Dr. Chandrakala, India
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SOURCE:


This review reviews the article ‘Association of umbilical coiling index by colour doppler ultrasonography at 18-22wks of gestation and perinatal outcome’. This review will initially summarize the article. Then it is intended to analyse the article structure and find out the methods of investigation and whether the informations are clearly evident to the reader. Finally, the review will critically analyse the article and evaluate its authority, accuracy, updation, objectivity and coverage. The review will analyse the images, the tables before judging the articles accessibility and credibility. The article to be reviewed has been written very clearly and is clinically very relevant and innovative.

KEYWORDS: Umbilical coiling index, Color Doppler, Ultrasonography, Gestation, Foetus

ARTICLE SUMMARY:

The article explores the pregnancy outcomes in relation to the distances between the coils in the umbilical cord, as detected in prenatal ultrasound. The outcomes that were considered were birth weight, mode of delivery, meconium staining of liquor, apgar scores of babies and gestational age of the foetus at the time of delivery. The article thus introduces a non invasive method of investigation to predict a few morbidities like preterm delivery, fetal distress, chance of caesarean section and admission in neonatal intensive care unit. The study was conducted in 600 uncomplicated pregnant mothers who had singleton pregnancies in whom the above prenatal complications, when occur, are otherwise unexplainable.

The article concludes that abnormal coiling was strongly associated with prenatal morbidities, especially low birth weight. The article leaves room for further researches towards assessment of underlying pathologies associated with normal and abnormal coiling of umbilical cord.
ARTICLE STRUCTURE:

The article commences with an abstract. The abstract provides a brief overview of the objectives of the study, the methods of investigation, statistical analysis and the results.

The introduction of the subject for assessment is very clear. The purpose of the study has been clearly defined. The methods undertaken in the study has been described in short paragraphs and in simple language and hence easily discernible. The tables provide a clear picture of the distribution of patients and the outcomes studied. The results have been depicted with clarity. The discussion relates the results to a few studies done before. The number of studies quoted are few and this may be due to the innovative topic of research with few past references only.

The conclusion developed at the end of the article is very short. The conclusion has not summarised the positive findings. It has neither provided information about avenues for future research which would further substantiate the findings extrapolated in the study. References were cited in text and set out clearly in the literature cited section The references were few, probably due to the fact that the earliest reference dates back only to 1995.

In effect, the article’s structure has been developed well with the use of short paragraphs simple language, clear images and discernible tables.

ARTICLE CRITIQUE:

Authority:

The journal, The Journal of Obstetrics and Gynaecology of India, is an official publication of “The Federation of Obstetrics & Gynaecological Societies of India” It is a peer reviewed journal indexed in med INDIA.

The author’s credibility has been well established. One of the authors is a Professor and Head of the Radiology Department of a Medical College, two of the authors are Associate Professors of the Department of Radiology and Obstetrics & Gynaecology of the same college. One of the author is a resident doctor who has had the opportunity to have the able guidance of the eminent professors.

Accuracy:

The hope of research is an innovative, non invasive approach to predict perinatal morbitities. It is a much sought after current topic and the article has been well supported by national and international references.

Currency:

The research was done in 2011. The article was accepted for publication in June 2012. It was published in this Journal in December 2012. The research topic is a novel one with only a few
The references date from 1995-2006. Hence the article is current and has recent updates.

**Relevance:**

The article shows focused research in the association of umbilical coiling index and perinatal outcome. The important perinatal morbidities like birth weight, mode of delivery, meconium staining of liquor, apgar scores and gestational age at delivery has been addressed. The normal umbilical coiling index has been compared with increased and decreased coiling to emphasize greater degree of significance in associations. The article, hence, bears great relevance to the topic.

**Objectivity:**

The information in the article has been objectively developed. The description of measurement of umbilical coiling index has references dating back to 1995. There was no evidence of bias as the research methods tended to analyse normal coiling, over coiling and under coiling. The statistical methods adopted for analysis were also standard. The participants were clearly defined – 600 primigravida with uncomplicated singleton pregnancies. Thus bias, due to pregnancy complications like anemia, hypertensive disorder of pregnancies, diabetes mellitus – both pregestational and gestational, has been negated. The literature review has supported the research results.

**Stability:**

The article has been published on the Journal of Obstetrics and Gynaecology of India, which is the official journal of Federation of Obstetrics and Gynaecological Societies of India. It is also peer reviewed Journal indexed in medINDIA. The editors of this journal are senior professors in the field of Obstetrics and Gynaecology, who are renowned academicians, who have authored chapters in standard text books.

**ANALYSIS OF IMAGE/TABLE**

The colour Doppler images of the umbilical cord showing varying degrees of coiling are clear depictions of normal and abnormal coiling of umbilical cord. The images were self descriptive.

The tables are self explanatory as well. The association of abnormal coiling with certain morbidities has been shown clearly but details like the indications for caesarean section and whether they were directly related to the presence of abnormal coiling has been left to be speculated.

The normal umbilical cord coil index is one coil/5 cm, i.e., 0.2 +/- 0.1 coils completed per cm. The antenatal
The umbilical cord coiling index is calculated as a reciprocal value of the distance between a pair of coils (antenatal umbilical cord coiling index = 1/distance in cm). The above picture shows normal coiling of umbilical cord.

The normal umbilical cord coiling index (UCI) is 0.17 (+/- 0.009) spirals completed per cm.

The above picture depicts both normal (UCI-0.17) and hypocoiling, that is, UCI <0.07.

Abnormal cord coiling, i.e. UCI <10th centile (<0.07) or >90th centile (>0.30) is associated with adverse pregnancy outcome.

Hypocoiling of the cord is associated with increased incidence of fetal demise, intrapartum fetal heart rate decelerations, operative delivery for fetal distress, anatomic-karyotypic abnormalities and chorio-amnionitis.
This picture shows severe hypo-coiling.

Hyper-coiling of the cord is associated with increased incidence of fetal growth restriction, intrapartum fetal heart rate decelerations, vascular thrombosis and cord stenosis. This picture shows hyper-coiling of umbilical cord (UCI >0.30)

**RECENT ADVANCES RELATED TO THE TOPIC:**

**Pathophysiological significance of abnormal umbilical cord coiling index**

In this study, Cromi et al. report that sonographic assessment of cross-sectional umbilical cord area can predict fetal macrosomia1. This is the latest of numerous recent studies that have investigated the possible relationship between umbilical cord characteristics and fetal outcome, including cord thickness, but particularly in relation to umbilical cord coiling. The phenomenon of coiling of the vessels within the umbilical cord in a regular helical pattern has long been recognized, but its precise underlying causative mechanism and presumed developmental benefit remain uncertain.

In the pathology literature, focal tight twisting of the umbilical cord has been associated with a proportion of intrauterine deaths, although the clinical significance of this association has remained unclear. Some have suggested that focal coiling is a consequence, rather than a cause, of intrauterine demise, whereas others have postulated that the overcoiled cord may in itself be a contributory factor to fetal death2.

Numerous investigators have recently attempted to study further the relationship between the coiling pattern of the umbilical cord and a range of pregnancy complications, with initial studies focusing on the association between undercoiled cords and adverse outcomes3,4. Several subsequent larger pathological studies, based on examination of the delivered placenta, have confirmed these associations and, in conjunction with the recognition that umbilical cord coiling could be determined antenatally by ultrasound examination5, 6, additional reports have suggested a relationship between extremes of abnormal cord coiling and diverse adverse pregnancy outcomes 3–17.
This Opinion aims to place such findings in context and provide a summary of the current state of knowledge regarding cord coiling and pregnancy outcome. The generally accepted method of assessing the degree of the umbilical cord coiling is by calculation of the umbilical coiling index (UCI), defined as the number of complete coils per centimeter length of cord. Using this criterion, studies to date have been remarkably consistent in reporting of the normal UCI, which is around 0.2 in the postpartum setting following examination of the delivered placenta and umbilical cord (pUCI) and 0.4 when determined antenatally by sonography (aUCI).

This apparent discrepancy, with increased coiling identified in utero, presumably is simply a reflection of the fact that the umbilical vessels are distended with fetal blood antenatally and this simple mechanical distension will result in a tighter apparent coiling of helical vessels. In order to compare the results of various studies, undercoiled/hypocoiled cords have been defined as those with an UCI <10th centile, whereas overcoiled/hypercoiled cords are defined as those with an UCI >90th centile. Such studies have determined that the degree of cord coiling can be reliably identified sonographically from the first trimester and that the UCI is related to gestation and the site of sampling (coiling being greater towards the fetal end of the cord). The mechanism by which physiological coiling occurs still, however, remains undetermined, with speculation that it may be related to early fetal activity and hemodynamic factors (supported by the finding of increased coiling in the recipient twin in twin-to-twin transfusion syndrome), or other anatomical issues such as the presence of Roach muscle.

Although an association between the aUCI and pUCI is present, which is not surprising as both are a measure of the same phenomenon, antenatal sonographic determination of UCI has a low sensitivity (40%) for predicting the presence of undercoiling or overcoiling as determined by postnatal cord examination. Therefore, it appears that the antenatal and postnatal coiling indices may not represent measurements of exactly the same process (see previous comment regarding vascular distension in utero); some cases that appear overcoiled or undercoiled on antenatal examination are within the normal range after delivery, and vice versa.

Nevertheless, despite these findings of apparent discordance, numerous studies have reported a range of adverse outcomes in association with abnormal cord coiling, detected either prenatally or postnatally (Tables 1 and 2). Essentially, it appears that hypocoiled cords are predominantly associated with an increased frequency of intrauterine death, low Apgar score, the presence of fetal congenital anomalies such as trisomies, and other abnormalities of placental development such as velamentous insertion and presence of a single umbilical artery. Such undercoiled cords are not generally associated with intrauterine growth restriction, fetal acidosis or asphyxia.

Hypercoiled cords also appear to be associated with fetal abnormalities such as trisomies and single umbilical artery. However, in contrast to undercoiled cords, they are not associated with an increased likelihood of intrauterine death or low Apgar score, but rather show an association with intrauterine growth restriction, fetal acidosis and asphyxia. Although there are differences in the precise associations and their magnitude, these findings appear fairly consistent across studies, both antenatal and postnatal. Given that such data exist, the question arises as to whether
these are simply associations with no pathophysiological significance or whether the cord coiling pattern can lead directly to adverse pregnancy outcome.

Mechanisms by which this could be mediated include the possibility that undercoiled cords may be more susceptible to acute kinking and therefore abrupt and marked cessation of blood flow; in the case of hypercoiled cords, flow dynamic principles and studies suggest that flow through a coiled tube should be associated with greater resistance to flow than through a straight tube. However, a study examining the relationship between a UCI and Doppler flow indices reported that increasing aUCI is in reality related to increased umbilical vein flow and reduced umbilical artery resistance. Furthermore, mechanical data indicate no difference in the effect of kinking according to UCI, but clearly demonstrate that greater cord coiling is associated with increased susceptibility to external compression-related reduction of flow. Therefore, it appears that increasing UCI may be potentially beneficial by increasing umbilical blood flow, probably as a result of localized pulsometer effects, but further increased coiling may predispose to compression mediated flow reduction and possible predisposition to the development of fetoplacental vascular thromboses.

In summary, it can be concluded that the majority of pregnancies with overcoiled or undercoiled umbilical cords, as determined by assessment of UCI, have a normal outcome. However, there appear to be consistent and clinically significant associations between abnormal coiling and a range of adverse pregnancy outcomes. Hypocoiled cords are mainly associated with intrauterine death, fetal anomalies and abnormal insertion; they are therefore likely to represent a marker of underlying intrinsic abnormal development, and are also possibly associated with an increased risk of acute reduction in blood flow due to kinking.

Hypercoiled cords, in addition to being possible markers of abnormal development, are associated with other complications including intrauterine growth restriction, fetal acidosis and asphyxia. No conclusive hemodynamic mechanism to explain these associations has yet been determined but such overcoiled cords may be at increased risk of causing embarrassment to fetoplacental flow in association with external compression, such as nuchal coiling. Further studies are necessary to explore such mechanisms. At present, fetal medicine practitioners and perinatal pathologists should continue to record and investigate clinical features associated with abnormal cord coiling patterns but, on the basis of currently available data, should remain cautious in assigning causality of any adverse outcome purely on the basis of the UCI.

CONCLUSION:

The article that has been reviewed deals with an innovative topic—Association of umbilical coiling index determined prenatally with colour Doppler and perinatal outcome. The study has been done on 600 uncomplicated primigravidas recruited at 18-22 weeks.

The association of umbilical cord coiling index in these uncomplicated primigravidas with adverse perinatal outcomes has been described. It has not been elaborated as to whether all the 600 primigravidas recruited in 2nd trimester remained without complications till term or delivery.
So if pregnancy complication had occurred, the adverse outcomes could well have been related to the antenatal complications, which have not been detailed. The article structure, otherwise, has been developed well. The images and tables reflect the analysis done with clarity. The statistical methods used for analysis were standard methods and literature review supports the research results.

The article in effect reflects the validity of a non invasive test to predict adverse perinatal outcome. Noninvasive investigation are generally preferred in obstetric practice. As the recruitment of patients has been done in the second trimester, it gives room for appropriate interventions and prevention of perinatal morbidities.

Future research to substantiate the results would be a boon to Obstetricians to offer preventive measures and ensure good maternal and fetal outcome. The etiopathology leading to abnormal coiling indices and the underlying pathophysiology in abnormal coiling causing adverse perinatal outcomes need to be researched and validated as well.

REFERENCES:


SIMPLE GUIDE FOR SONOLOGICAL EVALUATION OF APPENDICITIS

A Case Study by Dr. Avni K P Skandhan, India
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ABSTRACT

Appendicitis is one of the commonest causes of emergency department visits. Though it is a common pathology and has classical clinical features, yet it often presents atypically. In such cases, the diagnosis is a dilemma especially as there are many close mimics and these are the cases where imaging helps and ultrasound often is the first to be undertaken. However ultrasound is largely operator dependent and frequently provides false negative result. These may be overcome to a large extent by following a systematic methodology of looking for the pathology. Based on a review of the articles a basic picture especially for beginners is presented here.

KEYWORDS: - Appendicitis, Sonological Evaluation, Appendicitis, Ultrasound

INTRODUCTION

Appendicitis happens to be the commonest cause of acute abdominal pain 1. The classical symptomatology is of RIF pain, low grade fever and vomiting and on examination Mc Burney's point tenderness and peritoneal signs may be elicited with leucocytosis 1. Given this the diagnosis is straight forward, however a large number of cases do not present classically and also there are many mimics 2. The delay in diagnosis may lead to a progression of the simple appendicitis into perforation, abscess formation, peritonitis, bowel obstruction which has a higher morbidity and mortality 3.

Imaging helps in confirming appendicitis and to exclude other mimics, in cases where the diagnosis cannot be made clinically. Although these days role of CT in diagnosing appendicitis is being promoted, the primary imaging investigation remains ultrasound mainly as it is easily accessible, affordable and is radiation free 4.

Ultrasound has the major drawback of being largely operator dependent, and thereby there are a large false negative cases. Also in retro cecal appendix, obese patients, muscular patients, gaseous bowel distension, and poor machine resolution the pickup rates are very low 5. Considering all this ultrasound may be used as the primary screening modality especially in
children and pregnant ladies which may be followed up by a CT scan in cases of persistent doubt.

SONOLOGICAL EVALUATION

For appendix evaluation it is necessary to use a linear (7 – 10 MHz) probe. The diagnostic pitfalls in diagnosis of acute appendicitis are presence of tip / segmental appendicitis, retro cecal appendicitis, pelvic appendicitis, sub hepatic appendicitis, spontaneous resolution of appendicitis and mimics of appendicitis. To overcome these a systematic approach could be employed. The best technique for evaluating an appendix sonologically is to examine the RIF and locate the cecum or ileocecal junction and then to locate the origin of the appendix from the cecum. Other ways of doing this are to ask the patient to point to the area of maximum tenderness and do a thorough search in this self localized area. Regions to specifically look for are the pelvic brim where usually the appendix drapes over the iliac vessels, posterior to the terminal ileum and anterior to the iliacus muscle.

Various techniques to improve visualization:

- Transverse and longitudinal scanning of RIF with patient in supine position
- Gentle graded compression by the probe to push the gas filled loops aside.
- Review areas to be seen are:
  1. Pelvis (where the pelvic appendix could be found)
  2. Umbilical area (long appendix with tip in umbilical quadrant)
  3. Sub hepatic region (long sub hepatic appendix)
  4. Lateral aspect of the cecum (para cecal appendix)

- Posterior manual compression technique employs external compression at the back of right lower quadrant by placing patients hand behind the back, which brings the cecum closer to the anterior abdominal wall and transducer.
- Left oblique lateral decubitus position may be used. The bowel loops fall forwards in such a position, increasing chances of retro cecal appendix being picked up by looking specifically in the pre psoas region.
- Convex probe should be used to screen the pelvis for a pelvic inflammatory focus. Transvaginal scan may be employed to look actively for pelvic appendicitis.

CRITERION FOR TERMING APPENDICITIS:

1. Caliber of the appendix greater than 6 mm
2. Hypoechoic, non compressible and non peristaltic appendix.
3. Hyperemia in the wall of the appendix.
5. Should be traced entirely to locate segmental appendicitis or a breach in the wall.

Indirect evidences pointing to the presence of an underlying appendicitis.
- Cecum and distal ileum may show inflammatory changes.
- Periappendiceal mesentric fat inflammation.
- Free fluid with contents within in the RIF.
- Clumping of bowel loops in illeocecal region.

Specific situations that one may encounter are:

1. **Stump Appendicitis**: A patient who has undergone appendicectomy may present with similar complaints in the future. These cases are a diagnostic dilemma and the possibility of a rare entity like stump appendicitis must be borne in mind. A stub of residual appendix is seen showing signs of inflammation.

2. **Left sided appendicitis**: Left sided appendix may be seen in a patient who have malrotation of the gut, however this is extremely rare. A blind ending, non compressible, non peristaltic, tubular structure with features of inflammation if identified in the LIF should suggest the possibility of a left sided appendicitis, especially if the malrotation can be demonstrated by reversal of the SMA and SMV relation.

3. **Appendicitis in Pregnancy**: During pregnancy, due to underlying physiological and structural changes most often the patients do not present with the classical clinical picture. The diagnosis solely lies on ultrasound in such cases, as it is advisable to avoid CT in these patients. A complete screening of the right sided abdomen should be done as the gravid uterus displaces the bowel loops aside.

**MIMICS OF APPENDICTIS:**

1) **Mesentric Adenitis**: Mostly seen in pediatric age group. The patients have multiple enlarged mesentric lymph nodes in the RIF and periumbilical region, with the short axis of the significant lymph nodes measuring more than 6 mm.

2) **Right ovarian torsion**: An ovarian mass with loss of adnexal vascularity is demonstrated with minimal free fluid in the POD.

3) **Right sided ectopic**: A pregnant female with absence of an intrauterine gestation sac and presence of an adnexal mass /extra uterine gestation sac /tubal ring are suggestive.

4) **Intususception**: A bowel mass with a classical target appearance and demonstration of one bowel loop invaginating into another.
5) *Ileo cecitis*: The terminal ileum and/or cecum appear hypo dense with wall thickening suggestive of inflammation.

6) *Salpingitis*: On trans vaginal USG probe tenderness with POD fluid is noted. There may or may not be a dilated salpinx.

7) *Ruptured ovarian cyst*: Hemoperitoneum and an adnexal haematoma may be visualized. At times the collapsed cyst may be demonstrated.

8) *Epiploic appendagitis*: A focal area of mesentric fat inflammation is noted with probable demonstration of the epiploic appendage within the inflamed fat. CT is the preferred mode of imaging.

9) *Caecal diverticulitis*: Cecal wall thickening with adjacent fat inflammation may be noted. An abscess may also be demonstrated.

10) *Crohn's disease*: Terminal ileum appears thickened and can be differentiated from appendix by demonstrating a lack of a blind end. Peristalsis also can be seen in the ileal loop.

**SUMMARY**

Appendicitis is one of the commonest causes of emergency surgeries. When evaluating a patient with RIF pain various pathologies should be borne in mind. In a case of clinical dilemma an ultrasound can be carried out as the first modality of screening. The rate of picking up an inflamed appendix increases when a targeted search is made in a systematic manner; however non visualization of the same does not indicate a normal scan. The inter observer variability could be overcome to a large extent by following a correct and methodical approach. Other mimics of appendicitis should be specifically looked for and on a negative scan with persistence of doubts a contrast enhanced CT scan should be carried out. Delay in diagnosis may lead to various complications of appendicitis like perforation, peritonitis and bowel obstruction.

**REFERENCES**


**Figures :**

![Figure 1a](image1.png) ![Figure 1b](image2.png)
Figure 1a and 1b: Inflamed appendix on transverse and longitudinal sections: Hypoechoic and blind ending tubular structure.

Figure 2: Hyperechoic, shadowing structures noted within appendiceal lumen suggestive of appendiculolith.

Figure 3: Longitudinal image of the appendix with increased vascularity.
EXTRA PULMONARY TUBERCULOSIS OF THE HEAD AND NECK REGION IN PEDIATRIC POPULATIONAN

A Case Study by Dr. Abdul Azees V.K., India
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ABSTRACT

Tuberculosis is the most common communicable disease worldwide. In this era of immune-compromising disease like acquired immune deficiency syndrome, it is necessary to have knowledge of the different presenting features of various rare manifestation of tuberculosis. Young individuals are more prone to such lesion because lack of immunity, close grouping with infected patients and the general increased chances of varying presentation in such patients. This study groups together rare presentation of extrapulmonary tuberculosis of the head and neck region in an effort to increase the recognition of this disease.

KEYWORDS: Extrapulmonary tuberculosis, primary, head, neck, paediatric

INTRODUCTION

Tuberculosis is regarded as the most common communicable disease worldwide (1). Tuberculosis is World’s leading cause of death from a single infective agent and the rising incidence lead the World Health Organization (WHO) to declare the disease a global emergency (2, 3). Among the factors associated with the reversal of a previous decline in this infection are the increased global travel and a rising prevalence of immunodeficiency through HIV infections or drug therapy.

Tuberculosis used to be a common disease of the upper respiratory tract before the introduction of ant tuberculosis therapy, but nowadays it is a rare complication even in endemic tuberculosis area (4). Despite the contact between pulmonary secretions containing a high bacillary load and the mucous membranes of the upper respiratory tract, tuberculosis of the head and neck area, excluding laryngeal forms, is rare and constitute only 2-6% of extrapulmonary tuberculosis and 0.1-1% of all forms of tuberculosis (5, 6). Therefore, a correct differential diagnosis with other similar and more frequent lesions, especially carcinoma or different granulomatous diseases is crucial.

Young individuals are more prone to such lesion because of their lack of immunity, close grouping with infected patients and the increased chances of varying presentation. In this article,
we have tried to group together, some very rare presentation of primary tuberculosis, which may initially be very difficult to diagnose. These findings highlight the need for a thorough check up, and the utilisation of complete investigational protocol when studying patients suspected of extrapulmonary tuberculosis of the head and neck region.

**MATERIAL AND METHODS**

We carried out a prospective study in department of Otolaryngology, Kannur Medical College, Kannur India for the period March 2011-February 2012. In the study patient presenting to the Outpatient Department of Koyili hospital on routine OPD days were screened for tuberculosis. Those who fulfilled the following criteria were included: all patients with age less than 12 years were considered, those with pulmonary tuberculosis were not considered, primary tubercular lymphadenopathy were not considered, and only primary tuberculosis (diagnosed through proper histopathological test) of the sites pertaining to the head and neck were considered.

**RESULTS**

The history, examination and histopathology findings, AFB staining, chest X-ray results, response to treatment and diagnosis of ten patients were shown in Table 1.
<table>
<thead>
<tr>
<th>Case</th>
<th>History</th>
<th>Examination</th>
<th>Histopathology</th>
<th>AFB staining</th>
<th>Chest X-ray</th>
<th>Response to treatment</th>
<th>Diagnosis</th>
<th>Treatment/Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Epistaxis (1 month), decreased vision for 15 days, swelling of right eye for 15 days</td>
<td>Swelling of right eye (1 month) gradually increasing in size, slight pain and redness present</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Nasal tuberculosis with intracranial extension</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Swelling left jaw with left eye</td>
<td>Swelling below both the eyes</td>
<td>Non-caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Mandibular tuberculosis</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Swelling below the right eye (8 months) gradually increasing in size, slight pain and redness present</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, nontender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Zygomatic tuberculous abscess</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Swelling right side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (3 × 1 cm), sinus present overlying skin, no tenderness, non-compressible, not reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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<tr>
<td>5</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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<tr>
<td>6</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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<td>7</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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<td>8</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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<td>9</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
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<td>Parotid tuberculosis</td>
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<td>10</td>
<td>Swelling left side of face (6 months), sinus present just in front of left ear</td>
<td>Swelling involving the right parotid region (4 × 4 cm), firm, non-tender, not compressible, non-reducible, non-tender</td>
<td>Caseating granulomas</td>
<td>+ve</td>
<td>WNL</td>
<td>Present</td>
<td>Parotid tuberculosis</td>
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</table>

Note: AFB = Acid-Fast Bacillus; WNL = Within Normal Limits; +ve = Positive; -ve = Negative; + = Present; = Absent.
Case 2

Swelling in left lower jaw, gradually increasing, no pain or redness, no decrease in swelling with antibiotics

Case 4

Swelling involving the right parotid region with normal overlying skin, no tenderness, no redness, noncompressible, nonreducible
Case 7

Left tonsil enlarged and erythematous with foreign body sensation in throat

Case 8

Swelling in occipital region, nontender, fluctuant, noncompressible, no cough reflex

DISCUSSION

Tuberculosis has previously been the disease which has caused most mortality in humans. With increasing use of modern chemotherapeutic agents, the disease has almost disappeared in developed countries even though it is still prevalent in Southeast Asia. At present, however, even in developed countries with high prevalence of immune-compromising disease like AIDS, the incidence of tuberculosis has started to increase. The systemic factors that favour the chances of oral infection with tuberculosis include lowered host resistance (7), and increased virulence of the organisms. The local predisposing factors may be poor oral hygiene (8), local trauma (9), and the presence existing lesions like leukoplakia (10), and periapical granulomas (11).

Tuberculosis of the oral cavity and pharynx is rare and most of the medical literature on this condition is the form of case reports. The most frequent location of infection is: tongue (12, 13), gum (13, 14) and palate (16, 18). Fifty percent of cases with oral tuberculosis present with a concomitant pulmonary tuberculosis. Recently, in a review of 42 cases of oral tuberculosis, Mignogna et al, found that a third of their episodes were primary forms of infection (19). Although the pathogenesis of oral involvement is not definitely established, it appears most likely that the organisms gain entry into the mucosal tissue through a break in its surface. The probable importance of an intact mucosal epithelium in providing protection against
the infection is supported by the observation of Abbot et al, who isolated the tubercle bacilli from mouth washings of 44.9% of the patients with active pulmonary lesions (21).

There are only few previous reports of isolated uvular involvement of tuberculous mycobacterial infection (22). It is important, therefore, either to establish why the uvula may have become involved by mycobacterial infection, as in our patient or to decide whether it was a concomitant infection. Trauma is known to occur to the uvula, during brushing of teeth especially in the Indian population where the practice of brushing teeth with Neem leaves is so common. These wooden sticks can easily injure the uvula resulting in penetration of the mucosal barrier. Potentially pathogenic mycobacteria have been identified in environmental sources in large numbers previously (22).

Thus trauma to the uvula that is followed by gargles with contaminated water can result in primary uvular tuberculosis. However, this is a theoretical mechanism that would difficult to substantiate and although our patients give a history of using neem sticks for brushing did not clearly predate the onset of the uvular symptoms. However, following this practice over very long period as in our patient can result in this presentation.

Nasal tuberculosis extremely rare (23) and other forms of granulomatous diseases must be considered first to rule out primary nasal tuberculosis. Nasal obstruction and rhinorrhoea are the most frequent symptoms, although epistaxis, the presence of ulcerative lesions or recurrent polyps can be observed. A recent review reports 36 cases showed predominance in middle aged women (24). Our case was unusual in that it occurred in a boy. Also, our review of the literature turned up only one other case that featured intracranial involvement (25) which makes our case all the more unusual.

Tuberculosis of the jawbone is relatively rare. Involvement of the maxilla and mandible usually results in tuberculous osteomyelitis. The mandible shows a greater predisposition to the infection than the maxilla. In a study conducted by Chapotel (26), fifty cases of tuberculous Osteomyelitis involved the lower jawbone only. Tuberculosis of the jawbones may be secondary or primary and occurs because of either deep extension of the gingival lesion, from an infected post-extraction socket or through hematogenous spread of the infection (27). In our patient, a dental injury preceded the formation of tuberculous Osteomyelitis.

Mycobacterium tuberculosis infection of the salivary glands is rare, even in countries with a high prevalence of tuberculosis. There are 2 distinct forms—a localized form and a diffused form involving the entire gland due to direct spread from adjacent nodes or primary parenchymal involvement. The diagnosis is made through fine needle aspiration and radiological investigation like contrast enhanced CT scan.

Special investigations may help to establish the diagnosis but are often unreliable. The least invasive diagnostic investigation is tuberculin skin testing. The tuberculin skin test is usually positive in tuberculosis; however, a negative test does not rule out the disease. In all our cases the tuberculin skin tests were highly positive. The erythrocyte sedimentation ratio may be elevated, as was the case in all our patient, and thus it is a good therapeutic indicator but is not specific.
Confirmation of the diagnosis can be made with the following criteria: a) compatible histopathologic appearance of biopsied tissue (granulomas with epitheloid cells), b) demonstration of AFB on biopsy specimen, and c) growth of Mycobacterium tuberculosis from the biopsy specimen (28, 29). However, initial microbiologic investigation with conventional acid-fast stains (e.g., Ziehl-Neelsen) and the fluorochrome procedure with stains such as auramine can be unreliable and are negative in up to 50% of cases.

Culture of mycobacteria is time consuming, requiring 5 to 6 weeks to produce results. The yield is also low. In the literature, cultures are reported to be positive in 50% to 70% of patients (30, 31). The diagnosis is therefore often made by a combination of the clinical picture, histological finding, and response to antituberculous medication. The histopathological features of caseous granulomas were positive in all patients except two but in those, the diagnosis was only made when these children responded to the antitubercular treatment that was started empirically.

CONCLUSION

Our study highlights the fact that tuberculosis is more common than is thought especially in young individuals. Even though we did not compare our data to other studies in an adult or paediatric population, the mere presentation of so many rare cases of tuberculosis, highlights the fact that this infection is still present in paediatric population especially in the Southeast Asian region. These findings suggest that all patients with unusual presentation or with no response to conventional treatment should be investigated for tubercular infection even though these patients might not be immunocompromised.

This study was carried out to make medical practitioners more aware of the unusual presenting feature of primary tubercular infection at unusual sites, in paediatric population and the steps taken to investigate and treat such patients.

ACKNOWLEDGEMENTS

1) Dr. Basheer Abdulla, M.D, Paediatrics, Prof and mentor.

2) Dr. Veena Kumari, Assistant Professor, Dept of Paediatrics, KMC, Anjarakandy.
REFERENCES


AN ASSESSMENT OF PRIMARY HEALTH CARE IN KOSOFE LOCAL GOVERNMENT AREA OF LAGOS STATE

A Case Study By Prof Ajayi Adeola, Nigeria
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ABSTRACT

The study set out to assess Primary Health Care in Kosofe Local Government Area of Lagos State: It identified the roles played by Kosofe Local Government in the management of PHC in the area; determined the effects of PHC programmes on the lives of the people and communities in the Local Government Area: and also, examined the problems militating against successful management of the programme.

Primary data were collected through the use of questionnaire and interview method. Sixty (60) copies questionnaire were administered on both health service providers and health care beneficiaries in the Local Government in order of twenty (20) for the health care providers and forty (40) for the health care beneficiaries. Nineteen (19) respondents were also interviewed: six (6) health care providers-The Community Health Officer (CHO), two (2) Nurses, 1 Health Educator, Health Attendants and a Community Health Extension Workers (CHEW); thirteen (13) from the health care beneficiaries - 4 Pregnant Women, 4 Nursing Mothers, 3 Students and 2 Market Women. Secondary data were sourced from relevant textbooks, internet and journals. The data were analyzed using frequency distribution, tables and simple percentages.

The findings of the study show that Primary Health Care is the major service provided by the Local Government as indicated in the analysis where 65% of the respondents strongly agreed to, 86% of respondents also agreed that PHC’s services have effects over their lives positively, 58% of the respondents claimed that poor funding is a major problem of PHC etc.

The study concluded that Primary Health Care (PHC) delivery in Kosofe L.G.A is not yet satisfactory.

KEYWORDS:- Primary Health Care, Kosofe, Questionnaire

INTRODUCTION

1.1 BACKGROUND TO STUDY
The sustainability and viability of a country’s economic and social growth depend largely on vibrant healthcare sector of that nation. No country can maintain a steady economic growth in the absence of an adequate healthcare system. Healthcare issues have been an enigma in the life of Nigeria, solving the puzzle requires an aggressive approach from the federal, state, and local government. The continued stagnating healthcare system in Nigeria is of great social and economic consequence. Access to quality healthcare is either limited in Nigeria or non-existent with staggering financial burden to families and the nation. While the prevalence of fake drugs and substandard products are compounding the problems, the AIDS epidemic and unhealthy lifestyles of many individuals are making the matter worse (Orabuchi, 2005).

The World Health Organization’s definition of health is not merely the absence of disease but the attainment of a state of physical, mental, emotional and social well being. Health is therefore synonymous to wealth. Health administration did not receive deserved attention in Nigeria until 1999 when there was constitutional provision that placed health on concurrent list. The power to provide preventive, restorative and rehabilitative health care services is vested on the Local Government through its primary health care system.

It is increasingly acknowledged that there are weak links in the chain from public spending to actual outcomes in making basic services available to poor people. Simply increasingly budget allocations to essential services such as health and education are not enough to ensure that quality services are indeed delivered. Even when resources are appropriately allocated they may not reach their intended destinations because of organizational and incentive problems in public agencies. Even when resources reach the health clinic or the primary school, the actual service providers may have weak incentives or capacities to deliver effectively (Das Gupta et. al., 2003)

Traditionally, health was taken care of by ‘medicine-men’. These medicine-men were trained to know the different herbs and roots, how to prepare them, which ailments they cured, how to administer them, etc. Of course, with the incoming of modern medicine, Nigeria does have many ‘modern’ hospitals and clinics. Nowadays, doctors and nurses rely more on curing and preventing of diseases, rather than the ‘medicine-men’. However, in Nigeria, as in other parts of the world, people are realizing that sometimes herbal remedies can be just as effective as modern medicine, and they don’t usually have the long-term side effects that other medications can have. And they have been proven to work in certain situations. Sometimes a combination of herbal and modern medicine is what is needed, and both should be evaluated for the treatment of ailments (Kazakova, 2004).

In August 1987, the federal government launched its Primary Health Care plan (PHC), which President Ibrahim Babaginda announced as the cornerstone of health policy, intended to affect the entire national population. The main objectives of the health care plan included-accelerated Health care personnel development, improved collection and monitoring of health data; ensured availability of essential drugs in all areas of the country; implementation of an expanded programme on immunization; improved nutrition throughout the country; promotion of health awareness; development of a national family health programme; and widespread promotion of Oral Rehydration Therapy (ORT) for treatment of diarrhoeaL disease in infants and children.
The implementation of these programmes was intended to take place mainly through collaboration between the Ministry of Health and participating Local Government Councils which received direct grants from the Federal Government (Dare, 2000).

It is widely believed that States and Local Government Authorities are assigned primary responsibility for the delivery of basic public services. However, they are not adequately equipped with revenue resources to fulfill this obligation because the federal government retains bulk of government revenues. Recently, there have been several government initiatives to strengthen these institutions of community participation to improve health services (Ransome Kuti 1991).

1.2 STATEMENT OF PROBLEM

There is a general belief that the Nigerian Health Care delivery system is generally poor and the overall health system is still struggling to rank well among the member states of World Health Organization (WHO). The government of Nigeria at all levels has been making several efforts to improve Health Care services delivery in the country. This peradventure accounted for the non-attainment of Health for all in the year 2000.

Yearly budgetary allocations are given and health care services delivery has been decentralized to states and Local Governments in the Federation. At the Local Government level, (Kosofe Local Government inclusive) Health Care Delivery System is still generally poor and struggling. Despite the recognition health has received and the substantial fund pumped to Health Care Delivery at the Local Government Area, Health Care Delivery is yet to be satisfactory and adequate.

To this end, it is imperative to examine the management and evaluate the performance of Primary Health Care System in Kosofe Local Government. It is believed that through this study, comparative lessons can be drawn by researchers and health practitioners.

1.3 OBJECTIVES OF THE STUDY

The objectives of the study are to

i) Identify the roles played by Kosofe Local Government in the management of PHC in the area;

ii) Determine the effects of PHC programme on the lives of the people and communities in the Local Government Area; and

iii) Identify possible problems militating against successful management of the programme.
1.4 **RESEARCH QUESTIONS**

This study addresses the following research questions.

(i) What are the roles played by the Kosofe local government in the management of PHC?

(ii) What are the effects of PHC services on the lives of members of the communities in the local government?

(iii) What are the problems militating against successful management of the PHC?

1.5 **SIGNIFICANCE OF THE STUDY**

The study will serve as an eye-opener to the PHC stakeholders in the local government. Also, it is expected to serve as a reference material to researchers and scholars in the management and administration of Primary Health Care Delivery System.

The study will further provide necessary information on how to remove the constraints facing effective delivery of PHC in the Local Government. It would also serve as a springboard for further research in PHC management.

1.6 **SCOPE OF THE STUDY**

This study covers the assessment of primary health care in the three primary health centres in Kosofe Local Government Area of Lagos State. It takes into cognizance the impact of the Primary Health Centre in the local government area and also identify problems militating against the successful management of the centres in the local government.

1.7 **LIMITATION OF STUDY**

On the 27th of November, the birth of the entity called Kosofe Local Government was announced with four other new Local Governments in Lagos State. Although first created in 1980, abolished in 1984, Kosofe Local Government was recreated along with other new councils all over the nation in line with the Federal Government’s policy of bringing the government closer to the people as a result of the yearnings and aspirations of inhabitants.

There is no need doubting the fact that the birth of Kosofe is a step towards an improved welfare package for the citizens of the area. It is also a means of fostering unity among the indigenous and the residents of the area. Kosofe is located at the Northern part of Lagos State. It is bounded by 3 other local governernents namely: Ikeja, Ikorodu and Somolu. It also shares a boundary with Ogun State. Its jurisdiction comprises of ten wards and encompasses an area of about 178.85sq.km. Its headquarters is at Ogudu road and area offices at Ikosi Road,
Alapere-Agboyi Road, Ketu Alapere, Ogudu Area Office, Ogudu GRA, and Oworonsoki Area Office, Oworonsoki, Lagos State.

The indigenous dwellers of Kosofe Local Government Area were mainly the Aworís whose major occupation then were mat weaving, farming and fishing. However, due to its location as the gateway to the state and the hospitality of the indigenouss, Kosofe houses people from the Northern and Eastern parts of the country who engage in commercial activities in the various markets such as Mile 12 and Ketu Markets. Another emergent class of dwellers in Kosofe are top civil servants and officials who live in Government Residential Areas of Magodo and Ogudu.

Despite the diversity of its dwellers, the Local Government is very peaceful and the relationship between the different groups is very cordial. This gives a favourable background for the development of the area.

1.8 DEFINITION OF TERMS

Health: State of complete physical, mental and social well being not merely the absence of any disease or infirmity.

Primary Health Care - is essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their participation and at a cost which the country can afford to maintain at every stage of their development in the spirit of self-reliance and self determination. Assessment- Is deciding the amount or value in order to attain or achieve stated goals.

REFERENCES;

BOOKS


**JOURNALS**


ROLE OF COMPUTED TOMOGRAPHY IN ACUTE PANCREATITIS AND ITS COMPLICATIONS AMONG AGE GROUPS

A Case Study by Dr. Vikash Kumar Bhojasiya, India
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SOURCE


ABSTRACT

Acute pancreatitis is the inflammation of the pancreatic parenchyma. It can vary from mild to severe form with many simple to dangerous complications. Clinically patient presents with severe abdominal pain in the epigastric region. Vomiting, fever may be present. However it may present with various other types in complicated cases. Ultrasound is not very much useful as the gland visualization is poor and not in its complete entirety, due to its position and bowel gas shadows. CT is the investigation of choice, which shows enlarged hypodense pancreatic parenchyma. Fluid collection in the lesser sac and retropitoneum may be seen. The occurrence of the disease is less common in children; more in alcoholics and fatty females.

KEYWORDS: Tomography, Acute Pancreatitis, Pancreatic Parenchyma

INTRODUCTION

This review critically discusses about the article Role of Computed Tomography in Acute Pancreatitis and its Complications among Age Groups’, JPMA 200; Vol. 55, No. 10, October 2005, 431,. Herein the simple methodology is followed to evaluated the effectiveness of the study. We analysed the abstract of the study. Then we followed the various literature put forward for the study. Slowly moving on, we summarize the article in total. Then the pattern is analysed for the structure of article. Various comments are written for the sections of article reflecting the credibility of the article.
REVIEW OF LITERATURE

Acute pancreatitis is a sudden inflammation that occurs over a short period of time. In the majority of cases, acute pancreatitis is caused by gallstones or heavy alcohol use. Other causes include medications, infections, trauma, metabolic disorders, and surgery. In up to 30% of people with acute pancreatitis, the cause is unknown.

The severity of acute pancreatitis may range from mild abdominal discomfort to a severe, life-threatening illness. However, the majority of people with acute pancreatitis recover completely after receiving the appropriate treatment.

In very severe cases, acute pancreatitis can result in bleeding into the gland, serious tissue damage, infection, and cyst formation. Severe pancreatitis can also create conditions which can harm other vital organs such as the heart, lungs, and kidneys.

Contrast-enhanced computed tomography (CECT) is the standard imaging modality for the evaluation of acute pancreatitis and its complications. Using non–contrast-enhanced CT, clinicians can establish the diagnosis and demonstrate fluid collections but cannot evaluate for pancreatic necrosis or vascular complications.

CECT allows complete visualization of the pancreas and retroperitoneum, even in the setting of ileus or overlying bandages from a recent surgical procedure. CECT can help detect almost all major abdominal complications of acute pancreatitis, such as fluid collections, pseudocysts, abscesses, venous thrombosis, and pseudoaneurysms. In addition, CECT can be used to guide percutaneous/interventional procedures such as diagnostic fine-needle aspiration or catheter placement. CECT may be performed on severely ill patients including intubated patients. Lastly, CECT can be used as a prognostic indicator of the severity of acute pancreatitis.

ARTICLE SUMMARY

This is a study conducted in 40 patients over a period of one year. It evaluates the role of CT scan in acute pancreatitis and its effectiveness in various age groups. Same CT scan machine and procedure was used. The severity of the acute pancreatitis can be evaluated by CT severity index. The CTSI in acute pancreatitis devised by Balthazar et al was used in this study.

ARTICLE STRUCTURE

Looking into the format of the article is very important. It shows us the approach of the author to present his study. In this article, the emphasis had been put forward much from the beginning by keeping the abstract very strong and clear. Abstract includes the study design and its objective. Then in body part, the article began with introducing the very brief concept of acute pancreatitis. It says Acute pancreatitis is a protean disease with a broad clinical spectrum of findings varying from mild to severe. Then it presents the patient and methods.
Various subheadings are included which covers the minor details of the study. For example the CT technique used was briefly mentioned. Amount of contrast used, CT severity index was described in detail. It was developed by Balthazaar et al. It is a prognostic indicator of morbidity and mortality in cases of acute pancreatitis. The study is a research study conducted by author; hence it does have some conventional information in each section. It also mentioned a brief role of MRI in such cases. Results had been put in tabular form. Images were used at appropriate places. Finally discussions and conclusions were made from the study. Discussion was made in a comprehensive manner and very correct to it; however conclusion seems to be too short. No new conclusion was made. References were cited in-text and set out clearly in the literature cited section

ARTICLE CRITIQUE

Authority:

The journal JPMA is monthly medical journal, published in Karachi. This journal contains all the data and activities done genuinely by the various research teams including the colleges and students work. The editor will take into account all the necessary precautions to verify the article before publishing in leading journal. So the credibility of the article is more and justified as it is linked to the country’s major journal. The author is highly educated and well qualified person. He had done other research work and his articles were used in other references

Accuracy:

The article is very much accurate in describing all its findings in correct way. The data shown also matches with similar study conducted elsewhere. The study done in a formulated way which also brings the article to be more accurate. The images shown in the article are direct evidence of the accuracy of the diagnosis

Current :

The study was done in Aug 2001 to August 2002. The journal was published in October 2005, while the article was accepted for publication in December 2004. The research it describes was current and the article cites up-to-date references in the body of the text (ranging from 1990-2001). Therefore the article is current.

Relevance:

The article was written and compiled by the well qualified doctors who made their sincere attempts to highlight the role of CT in pancreatitis. Besides, it also mentioned some good
references and tables. Their study and data are very much useful for medical students and academician for their research purpose.

Objectivity:

The information was objectively developed, well supported with a current research base and with all evidence acknowledged and referenced. There was comprehensive evaluation of the role of the CT scan in the acute pancreatitis in various age groups. There was no evidence of bias. The article acknowledged the complexity of the issues discussed in a number of ways. For example, the literature review provided CT assessment in various age groups; considering the severity of the disease more so in the adult population – a sample of 40 patients including 33 males and 7 women were included. The patients were divided into three age groups. First group was less than 40 years (12 patients), second was 40-60 years (17 patients) and last group was more than 60 years (11 patients).

Stability:

The article, with its source an academic journal on an academic data base is stable as a resource

ANALYSIS OF GRAPH/IMAGE/TABLE

The study had put various tables and images at appropriate places. For example CT severity index table showing the grading and degree of necrosis points, table showing correlation between CTSI with Age, Hospital stay, and Complications, Table showing Correlation of Age with Degree of Necrosis, images showing the complications of pancreatitis (Psuedocyst formation). However the number of images displayed is relatively less; without causing significant change in the research process. The graph was also not included in the study. Presence of the graph enhances the presentation which is lacking in this study.

RECENT ADVANCES RELATED TO THE TOPIC

With relative easy availability of the multislice CT scan, it is slowly replacing the conventional CT machines, esp. in the metropolitan cities. Multislice CT scan including 16 slice to 128 slice can very well and effectively pick up any complications of acute pancreatitis like vascular complication. CT angiogram and venogram is possible due to this. Hence the advancement of technology has helped in identification of the complications in its early stage.

MRI can be used in patients having implants and in those cases where contrast CT scan in contraindicated. For example in case of renal failure. No radiation hazards, hence can be useful in pregnancy also. Fast sequences are used for imaging the pancreatic vascular imaging.
MRCP is a novel approach for the diagnosis of the obstructing calculi in the pancreatic duct. It uses heavily T2-weighted imaging.

ERCP is helpful for diagnosis as well as for removing the stones from the main pancreatic duct. The use of nuclear scintigraphy is not routinely recommended in the diagnosis of the acute pancreatitis; however, it is an effective investigation to rule out malignancy. Hence, in cases of doubt, it is used for the purpose.

**CONCLUSION**

This review has both summarized and critically reviewed the article ‘Role of Computed Tomography in Acute Pancreatitis and its Complications among Age Groups’. The conclusion was made short and justified to the study. This article does not go deep into the other aspects of the study, focusing only on the aim.

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