had her appendix removed as part of surgical intervention for intestinal obstruction secondary to amebiasis; four of them were children, three had reactive lymphoid hyperplasia, and four had extramedullary hematopoiesis. None of the men had evidence of acute appendicitis.

All except two of the eleven patients that had extramedullary hematopoiesis were children under the age of 10 years. The patient was secondary to amebiasis, bowel obstruction, and chronic appendicitis. (1) Onset of symptoms (2) Appendectomy was performed on clinical diagnosis of acute appendicitis, giving a negligible appendicectomy rate (18.2%). This was more common in females with 16 cases (99%)

Consentaneous inflammation with the characteristic packed cells were seen in the two patients in the Yoruba and Hausa clinic while a case of suppurative appendicitis was seen in a 4 year old male.

Neoplastic lesions were recorded in five cases, a 50 year old female with mesothelioma of the appendix, a 50 year old female with adenocarcinoma of the appendix and a 34 year old male with tubular-villus adenoma with severe dysplasia. The cancerous lesion did not show any evidence of tumour elsewhere or evidence of carcinoma syndrome. The tubular-villus adenoma presented clinically as a case of acute appendicitis with an intramural tumour located at the tip of the appendix and causing obstruction to the lumen. Ultrasound scan did not show any basement membrane invasion.

Discussion

Acute appendicitis was found to be common in the second and third decades of life; this study, being performed on a different population, has a mean age of 24.2 years. This corresponds with studies from Nigeria, and other African countries (5,8, 13). Majority of these studies showed that acute appendicitis made its onset with a peak in the third decade of life and declines thereafter. The mean age is similar to 24.2 years reported in Nigeria, South Africa (9) and median age of 28.2 years reported from South Africa by Mckinlay et al. (15). It is comparable to the age range of 22 years reported in Jharkhand, India (8). Even in the United Kingdom, the peak age was reported to be in the second decade of life being the commonest form (1, 2).

Acute appendicitis was confirmed histologically in 58 of the 86 cases by clinical diagnosis of acute appendicitis giving a diagnostic accuracy of 67.6%. This occurred in 60% recorded in Japan (11,2) Nigeria which showed 64% and 66.6% and 77% reported in two separate studies from the United Kingdom (1,5). This implies that histological diagnosis in the diagnosis of appendicitis in developing countries that lack facilities for sophisticated investigations is adequate. The use of triple tests of C-reactive protein, white blood cells and percentage neutrophil in patients has been advocated for clinical diagnosis (21). Elevated C-reactive protein and total white blood cell count with relative neutrophilia in combination with clinical symptoms and signs can improve the diagnostic accuracy and decrease negative laparotomy rate (22). Similar to what has been established in the literature, acute appendicitis was more common in males than females in this study with a male to female ratio of 1.1.

Introduction

Acute appendicitis is the most common cause of acute surgical abdomen requiring emergency surgery both in developed and developing countries (1,2). It is reported that 7% of individuals in Western countries suffer an episode of acute appendicitis in their lifetime (1,2). In Nigeria acute appendicitis is reported to be the commonest or the 2nd most common surgical abdominal emergency (4,5). Due to delay in presentation or surgical intervention, morbidity/mortality is higher in developing countries as a result of complications (6,7,8). Complications include perforation following perforation, post appendectomy and wound infection (9,10). Appendectomy in patients presenting with clinically suspected acute appendicitis show a variety of histopathological characteristics including unipathologies such as carcinoid tumours, adenocarcinomas, mucinous, and parasitic infestations (10). The diagnostic accuracy rate measured by the number of cases with histological evidence of acute appendicitis is ranges between 41.5%-113.5%. Clinical diagnosis is quite challenging particularly in women and the extremes of age due to clinical presentation and the fact that the presentation cannot sustain other conditions (1,3,4).

The purpose of histopathology in appendectomy is two fold; to confirm the diagnosis of acute appendicitis and to disclose, present any additional pathologies that may not have been suspected but may affect subsequent clinical management of patient (7). In about 28% of appendectomy, no pathology is present, so-called negative appendectomy or unnecessary appendectomy, and several surgeons have documented high number of unusual pathologies in appendectomy samples (7,18,19) This is the reason why it has been advocated that all appendectomy samples should be sent for histopathology (10). Even in the so-called negative appendectomy, studies have reported that some of them may show molecular evidence of inflammation, demonstrated by abnormal expression of cytokines such as tumour necrotic factor alpha (TNF alpha) and interleukin-2 (20,21).

In this study, all appendectomy samples are sent for histopathology examination with a wide neuropathic evidence of appendicitis in order to avoid missing important pathologies that may not be obvious macroscopically. The aim of this study is to evaluate various pathologies present in appendectomy samples that were received in the department over a period of eight years.

Methodology

The materials for this study consisted of slides and paraffin embedded blocks of all the appendectomy samples submitted for histopathology examination to the department of Microbiology and Immunology, Lagos University Teaching Hospital between 2000 and 2007.
of 1.8 to 2.0, a ratio which is comparable to average of 1.6 to 1.8 reported in various studies from Africa (5,8,9,11). Perforation rate in this study was 30.5%, a figure that is higher than 7.0% reported in Calabar, Eastern Nigeria (22) and 13.9% reported from Cardiff, United Kingdom (11). It is however comparable with rates of 25.9, 29.7% and 37.7% reported from Ghana, Kenya, and South Africa respectively (8,12,21). The lower figure from Calabar could be attributed to the fact that the study was mostly clinically based and on children aged 0-15 years (23). In our study, about 35% of the patients that had perforated appendicitis were between the ages of 10 to 15 years and were more common in males. The rate of perforation has been associated with atypical and or late presentation which results in delay in surgical intervention. Perforation also increases the number of days on admission as well as the morbidity. Some workers have advocated that adequate investigation in atypical presentation only delays treatment with little specific information and that surgery should not be delayed in such cases(6).

The negative appendectomy rate of 10.2% in this study is within the range of 10-20% considered to be acceptable and corroborates previous studies from Nigeria in which rates of 11.7% and 15.9% (12,25) were reported and rates of 19.6%, 18.3%, 18% reported from Kenya, Uganda and Dar es Salaam (10,11,13). Higher rates of 25.9% and 28.4% were reported in studies from South Africa and Cardiff United Kingdom respectively (24,21). The highest rate in the Cardiff study was attributed to aggressive surgical approach for fear of perforation, inaccuracy of available diagnostic methods or increased appendectomy done by trainee surgeons. As reported in the literature, it was noted that negative appendectomy was higher in females than males. The difference as reported in previous studies is more significant in female postmenopausal females (1,26).

The reason for this is that the symptoms and signs of appendicitis simulate those of gynecological and urinary diseases which are common in females (1,26). Several methods have been proposed to reduce the incidence of negative appendectomy such as use of computed tomography, ultrasound and laparoscopy (16,26) in Jor, North Central Nigeria laparoscopy reduced the rate from 29.7% in males and 47% in females to 11% and 10% respectively (16). Bemad et al reported reduction of the rate from 28% to 7% if computed tomography or ultrasound was performed pre-operatively in female patients and but the rate was not affected by pre-operative imaging in male patients (26).

Prevalence of unusual pathology in this study was 2% and concurs with previous studies in which rates ranging between 1.4% and 2.4% have been reported. (15,27). It has been reported that operative diagnosis of the appendix can be unreliable in detecting atelectrism of the appendix and if that these samples were not examined microscopically, the lesions could be missed which could impact negatively on patient survival or morbidity(1).

Other causes send specimens for histopathological analysis only if they appear macroscopically abnormal at surgery. An appendectomy is a practice which has the potential to save more lives, than the practice of blind ligation of the appendix (19). Jones et al reported a 3.5% rate of 1255 appendectomy samples while Durugba et al reported a rate of 12.6% and 4.0% rate of 125 appendectomy samples respectively (1,19). The lower figure from Calabar could be attributed to the fact that the study was mostly clinically based and on children aged 0-15 years (23). In our study, about 35% of the patients that had perforated appendicitis were between the ages of 10 to 15 years and were more common in males. The rate of perforation has been associated with atypical and or late presentation which results in delay in surgical intervention. Perforation also increases the number of days on admission as well as the morbidity. Some workers have advocated that adequate investigation in atypical presentation only delays treatment with little specific information and that surgery should not be delayed in such cases(6).

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