Surgeries and Cardiovascular System

Single Stage Resection
Receptor Status in Carcinoma

Symptomatic Cystic Duct
Cardiorespiratory Fitness of Young

Discovering Thoughts, Inventing Future

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Symptomatic Cystic Duct Stump Lithiasis 21 Years after Cholecystectomy

By Somak Das, CV Gopakumar, Sdeepta Kumar Swain, Pavan Kumar Addala, Dinesh Zirpe, Kirubakaran Ranganathan & Balachandar TG

Apollo Hospital, India

Abstract- Cystic duct stump or remnant gall bladder is, if not always, one of the important cause of postcholecystectomy symptoms. In laparoscopic era incidence of leaving long cystic duct stump has increased. Also difficult gall bladder surgeries often end up with incomplete removal of gall bladder. Magnetic resonance cholangiogram is an optimal diagnostic modality. Treatment is to remove remnant cystic duct stump either by laparoscopy or by open method. We are reporting a case of symptomatic cystic duct stump with a very late presentation.

Keywords: remnant cystic duct stump, remnant gall bladder stump, incomplete cholecystectomy, postcholecystectomy symptoms, laparoscopy, surgery.

GJMR-I Classification: NLMC Code: WI 755
Symptomatic Cystic Duct Stump Lithiasis 21 Years after Cholecystectomy

Somak Das a, CV Gopakumar b, Sdeepa Kumar Swain c, Pavan Kumar Addala d, Dinesh Zirpe e, Kirubakaran Ranganathan f & Balachandar TG

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I. Introduction

Difficult dissection in presence of severe inflammation or dense adhesions during surgery for symptomatic gall stone disease sometime ends up with incomplete cholecystectomy. Long cystic duct remnant is more frequently encountered in the laparoscopic approach, where the cystic duct is usually divided close to the gallbladder to avoid iatrogenic common bile duct injury1. Cystic duct stump lithiasis is found in 10-40% of patients with postcholecystectomy symptoms particularly in laparoscopic era2. We report a case presenting with symptomatic cystic duct lithiasis 21 years after open cholecystectomy.

II. Case Report

A 72 years old male patient with good performance status and no known co-morbid conditions came to us with complaint of recurrent dull aching pain in right upper abdomen for 2 months. Frequency of pain was 2 to 4 times per month. There was no radiation of pain. Each pain episode persisted for 1-2 hours. It did not require any hospital admission, but oral analgesics. It was associated with nausea but not with vomiting. It was not associated with fever, jaundice, anorexia or weight loss. History revealed that the patient had open cholecystectomy 21 years back (1993) for symptomatic gall stone disease in some other hospital. Written details of the surgery or histopathology reports were not available. It was a difficult procedure as told by the operating surgeon to the patient. Gall bladder and stones were shown to the patient’s relatives at the end of the surgery. One drain had been kept during surgery, which was draining greenish fluid of maximum 200 ml/day for few days. Drain output gradually came down and the drain was taken out around 2 weeks after surgery. Patient was discharged after the drain removal. Since then the patient had no problem till two months back when he suffered from recurrent pain. Physical examinations of the patient were essentially normal. There was a 10 cm healthy right subcostal surgical scar with a 1.5 cm drain site scar just lateral to it. There was no palpable mass or organomegaly. No free fluid was detected. Routine blood investigations showed haemoglobin of 12.3 gm%, total leucocyte count of 7600/cumm, platelet count of 232000/cumm, urea of 23 mg/dl, creatinine of 0.9 mg/dl, bilirubin total of 0.8 mg/dl, ALT of 34 U/Lit, AST of 27 U/Lit, alkaline phosphatase of 69 U/Lit, total protein of 7.4 gm/dl and albumin of 4 gm/dl. Ultrasound abdomen revealed a 3 x 2 cm cystic lesion in gall bladder fossa with stones inside. Liver echotexture was normal. Intrahepatic or extrahepatic biliary channels were not dilated. Doppler ultrasound helped to elicit normal portal venous and hepatic arterial flow and pattern. Magnetic resonance cholangiopancreatogram (MRCP) revealed a 3 x 2 cm dilated remnant cystic duct stump with stones inside and normal intrahepatic and extrahepatic biliary channels (Fig - 1). Surgical management was planned and open exploration with completion cholecystectomy was performed. Abdomen was opened through the previous right subcostal incision. Dense right subhepatic and suprahepatic adhesions were divided. There was a 4 cm cystic duct stump with stones inside and normal intrahepatic and extrahepatic biliary channels was dissected (Fig - 3). No cystic artery was found. Cystic duct was divided close to bile duct and transfixed. Remnant cystic duct stump containing two 5 mm calculi was dissected out of liver bed (Fig – 4). 28 french tube drain was placed in right subhepatic space. Abdomen was closed en masse. Postoperative period was uneventful. Patient was discharged on 3rd post operative day after removing drain. Histopathology revealed features of chronic inflammation in the resected specimen. Patient is now

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absolutely symptom free since this operation performed one year back.

**Figure 1**: MRCP finding of symptomatic cystic duct stump stone

**Figure 2**: Dilated cystic duct stump, operative finding

**Figure 3**: Cystic duct stump separated from liver, operative finding

**Figure 4**: Resected specimen

**III. Discussion**

Around 5% of postcholecystectomy patients present with severe right upper abdominal pain similar to symptomatic gall stone disease. Causes are retained or recurrent bile duct stone, biliary stricture, cystic neuroma, papillary stenosis, sphincter of Oddi dyskinesia, cystic duct stump lithiasis or remnant gall bladder. These are collectively called postcholecystectomy symptoms and can present from two days to 25 years after surgery. Cystic duct remnant is defined as residual cystic duct of more than 1 cm in length with or without presence of stones in a postcholecystectomy patient. It is more common in the setting of acute cholecystitis where to avoid bile duct injury cystic duct is often divided very near to gall bladder or some length of gall bladder is left in situ in the presence of severe inflammation in Calot’s triangle. Also in laparoscopic era, division of cystic duct close to bile duct is often avoided to prevent bile duct injury. This situation can be prevented by correctly identifying cystic duct and bile duct junction and safely dividing the cystic duct keeping the cystic duct length less than 1 cm. Symptomatic cystic duct lithiasis usually presents with right-upper-quadrant pain and dyspepsia without jaundice.

Ultrasound abdomen is often the initial investigation but it can miss the cause of postcholecystectomy pain in nearly 50% of cases when compared to cholangiogram. MRCP has sensitivity between 85% to 100% in detecting biliary anatomy and stones. Endoscopic retrograde cholangiogram (ERC) is similarly effective tool, but exclusively used therapeutically when indicated. Sensitivity and specificity of endoscopic ultrasound (EUS) is nearly similar to MRCP. EUS is particularly helpful to avoid unnecessary biliary canulation in suspicious cases, if done prior to ERC. Diagnosis of remnant cystic duct stump is considered if a gall bladder like structure is detected in a patient during radiological evaluation of post-cholecystectomy symptoms.
Treatment is surgical removal of cystic duct stump either by laparoscopy or by open method. Severe postoperative adhesions often require open procedure, though laparoscopic removal is feasible 5, 6, 7.

Here the patient had a symptomatic cystic duct stump lithiasis 21 years after a difficult cholecystectomy which had probably been complicated by postoperative biliary leak. Anticipating severe postoperative adhesions we opted for open completion cholecystectomy and thus justified our approach according to our findings.

IV. Conclusions

Symptomatic cystic duct stump lithiasis after cholecystectomy is an important cause of postcholecystectomy symptoms and can appear after variable period following gall bladder surgery. Ultrasound, EUS and MRCP can establish the diagnosis. Redo completion cholecystectomy either by laparoscopy or by open exploration, though often difficult, relieves the problem. Right upper quadrant abdominal pain after any period of time following cholecystectomy particularly with normal liver function tests, should be investigated accordingly to rule out this curable condition.

References Références Referencias


Symptomatic Cystic Duct Stump Lithiasis 21 Years After Cholecystectomy

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A Single Stage Resection and Primary Anastomosis without Colonic Lavage for Left-Sided Colonic Obstruction- Our Experience

By Felix O. Oribabor, Oluwasegun A. Amao, Olufemi S. Fatudimu, Saheed O. Akanni, Bamidele O. Adebayo, Tunde Aladesanmi & David O. Akinola

Federal Medical Centre, Nigeria

Abstract- Introduction: In the past century, colorectal surgeons considered a cleansed and empty bowel, a pre-requisite for a safe colonic and rectal resection and anastomosis. Also during this period, acute left colonic obstruction in an unprepared colon, could only be resected and primarily anastomosed if a proximal diverting colostomy was instituted. Tradition has held that an unprepared colon, poses an unacceptable high rate of failure of the anastomosis to heal. But recent evidence from Europe and other centres of the world have proven this surgical dogma to be incorrect.

The purpose of this study is to report our experience with a single-staged resection and primary anastomosis of acute left colonic obstruction, without bowel preparation or a diverting colostomy.

Methodology: A prospective study of a single-stage resection and primary anastomosis was done without mechanical bowel preparation or on-table colonic lavage or a proximal diverting colostomy for left colonic obstructions, on all consecutive patients that presented to the surgical unit of the Federal Medical Centre, Ido – Ekiti between January 2007 – December 2012.

Keywords: left colonic obstruction, bowel preparation, single-stage resection and primary anastomosis.

GJMR-I Classification: NLMC Code: WI 770
A Single Stage Resection and Primary Anastomosis without Colonic Lavage for Left-Sided Colonic Obstruction- Our Experience

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Manual decompression of the colon was carried out, after resection intra-operatively. Post-operative abdominal infectious complications and extra-abdominal morbidity were looked out for and recorded prospectively.

Results: A total of forty-two (42) patients were included in the study. Twenty-nine (29) of the patients were males, while thirteen (13) were females; with a male: female ratio (2.23:1).

Twenty-six (26) of the patients had left colonic and rectal tumours causing the obstruction, while in sixteen (16) patients, acute volvulus of the sigmoid colon accounted for the obstruction. No mortality was recorded in this study.

Conclusion: Single staged resection and primary anastomosis is a do-able, safe and reliable current treatment modality for surgical management of left colonic obstruction with a low morbidity.

Mechanical bowel preparation or on-table colonic lavage or proximal diverting colostomies are unnecessary with this technique.

Keywords: left colonic obstruction, bowel preparation, single-stage resection and primary anastomosis.

I. Introduction

Since the first attempt at bowel surgery, a major aim had been to reduce the rate of post-operative infectious complications, especially anastomotic dehiscence 1. In the first half of the 20th century, mortality from colon and rectal surgery often exceeded 20%, mainly attributed to sepsis.

Modern surgical techniques and improved peri-operative care have significantly lowered the mortality rates 2,3. Infectious complications, however, is still a cause of morbidity, leading to increased costs, prolonged hospitalization and occasional mortality 3. Efficient bowel preparation, mechanical bowel preparation (MBP)/on – table lavage (OTL) or a diverting proximal colostomy, is considered to be a critical factor in preventing infectious complications and anastomotic dehiscence after colorectal surgery 4,5. Since Plumley 6 work on MBP of 1966 and Dudley et al. 7 of On-table lavage in 1980, MBP and OTL have been accepted as a surgical dogma. Although bowel preparation may be desirable to decrease distension, facilitate abdominal closure and improve colonic blood supply, there is now some evidence that cleansing of the colon of faecal matter is not necessary to ensure anastomotic integrity 2,9,10,11,12.

The aim of this study is to evaluate the definitive one stage resection of the left colon and rectal obstructions (due to tumours/acute sigmoid volvulus) and primary anastomosis without colonic lavage or a diverting proximal colostomy.

II. Methodology

This is a prospective observational study of forty-two (42) consecutive patients, admitted into the Surgical Unit of the Federal Medical Centre (FMC) Ido – Ekiti, Ekiti State, South West Nigeria between January 2007 to December 2012 for acute Left Colonic Obstruction. The study was approved by the Ethical Review Committee of the hospital.

The left colonic obstruction was due, either to left colon and rectal tumours or acute sigmoid volvulus. Included patients’ were aged 18 years or more, and had neither undergone MBP, On-table lavage nor a proximal dehiscence.
A Single Stage Resection and Primary Anastomosis without Colonic Lavage for Left-Sided Colonic Obstruction- Our Experience

Global Journal of Medical Research

Suction through a colostomy in the sigmoid colon. The gaseous distension of the bowel was relieved with a volvulus was first untwisted to relieve the obstruction; were assessed and resected. While the sigmoid colotomy was then closed and the sigmoid colon resected; as with the case of the colonic tumours, resuscitated pre-operatively. They all had pre-operative between two non-crushing clamps. The resected ends about 5 days. Consultant surgeons performed all the operations.

Atlaparatomy, the left colonic/rectal tumours were assessed and resected. While the sigmoid volvulus was first untwisted to relieve the obstruction; gaseous distension of the bowel was relieved with a suction through a colostomy in the sigmoid colon. The colotomy was then closed and the sigmoid colon resected; as with the case of the colonic tumours, between two non-crushing clamps. The resected ends were isolated from the operating field, with the help of abdominal mops.

Careful manual decompression (milking) of the proximal and distal colons were carried out, at which stage the clamps were removed to allow the solid faces to be expelled. The clamps were re-applied and the bowel ends were cleansed with swabs soaked in normal saline. The two bowel ends were then anastomosed using a 3/0 vicryl as an inner layer and a silk 2/0 as the outer layer. Both the proximal and distal colon/rectum were adequately mobilized to ensure a tension free anastomosis, which was manually done. No protecting stoma was instituted in any of the patients.

The peritoneum, after surgery were thoroughly lavaged with warm saline and peritoneal drains were routinely inserted.

The patients were closely monitored post-operatively for complications viz: wound infections, anastomotic leaks and intra abdominal abscesses.

Wound infection was defined as a wound draining purulent materials or erythema requiring re-initiation of antibiotic treatment. Anastomotic leakage was identified if faecal drainage was evident through a perianastomotic drain and abdominal abscess was defined as fluid collection demonstrated by abdominal ultrasound, in conjunction with elevated temperature or increased white blood cell counts. Tables were employed for data presentation. The results were analysed by arithmetic means and group percentages.

III. Results

A total of forty-two (42) patients were included in this study. There were twenty-nine 29, (69.0%) males and thirteen 13 (30.95%) females. Their ages ranged between 22 to 85 years.

The cause of the left colonic obstruction was due to tumours in twenty-six (61.90%) patients and sigmoid volvulus in sixteen (38.09%) patients. Table I.

Four patients (9.52%) were excluded from the study, three of them were elderly patients whose ages ranged between 68 and 82 years with poorly controlled diabetes mellitus and presented with sigmoid volvulus. The fourth was a 70 year old patient with low rectal tumour whose anastomosis was protected with a proximal colostomy.

Analysis of the post-operative outcome in this study is shown in Table II.

Post-operative abdominal infectious complications were documented in (4) patients 9.52% and anastomotic leakage occurred in one (1) patient 2.38%.

There was no clinical evidence of intra-abdominal abscess collection with faecal peritonitis.

All the wound infections were managed conservatively with antibiotics (ceftriaxone and metronidazole).

No mortality was recorded and the duration of hospital stay ranged from 10 days to 21 days. The long hospital stay was found in those patients' that had wound infections.

All the patients had a favourable outcome and were discharged to the surgical outpatient clinic where they were seen for about 6 – 8 weeks until lost to follow-up.

IV. Discussion

Although bowel preparation (MBP or On-table lavage) before left sided colorectal surgery has become routine, there is a paucity of scientific evidence to support this practice.2,12 Traditionally, MBP was carried out on patients with partial left colonic obstruction that were to undergo surgery by using enemas in combination with oral laxatives to evacuate feces from the colon. But more recently, powerful oral cathartics: sodium phosphate and polyethylene glycol have been discovered which provides superior cleansing when
compared to the traditional methods by inducing diarrhoea which cleanses the bowel of solid faeces. These are now being used pre-operatively by most surgeons in preparing their patients for colorectal surgeries. In complete obstruction however, OTL is the method of choice used to rid the proximal colon of solid faeces intraoperatively after resection; in which a catheter is inserted into the caecum through an appendiceal stump after an appendectomy. Normal saline is then rushed antegrade through the bowel, thus ridding the proximal colon of its faecal content. During this period also, the cut ends of the bowels are exteriorised to ensure less spillage and wound contamination. However, recent improvement in morbidity and mortality rates of bowel surgery resulting from advances in peri-operative care and routine use of antibiotic prophylaxis, in conjunction with recent experience with primary repair of colonic injuries by trauma surgeons from Europe and Asia, describing elective operations on the left colon done safely without pre-/intra-operative bowel lavage, have caused a reconsideration of the true value of cleansing the colon before anastomosis. Also studies have shown that because the colonocytes receive their nutrition from intra-luminal free fatty acids produced by fermentation from colonic bacteria, lavaging the colon, may actually be detrimental to the healing of a colonic anastomosis.

In this study, we recorded a post-operative infectious complications in 4 patients (9.52%) and a leaked anastomosis in one patient (2.38%). There was no intra-abdominal abscess collection and peritonitis. All wound infections resolved with the recommencement of antibiotics therapy. The leaked anastomosis was re-laparatomized, the dehisced portion repaired and the anastomosis was then protected with an ileostomy. The latter was closed after 8 weeks. This result is in keeping with other workers in the field; AamerNaseer et al. recorded four (4) patients with superficial wound infection and one mortality, while working on 30 patients' with acute sigmoid volvulus, recorded superficial wound infections in 16 (20%) patients, no anastomotic leakage and no mortality in their series. From our study, we may wish to emphasize that the critical risk factors in colonic dehiscence, after anastomosis is the solid faecal matter (SFM); which if carefully removed by simple manual decompression (milking) would render the anastomosis safe. This claim is further buttressed by the fact that all right colectomies with either ileo-colic or colo-colic anastomosis are not usually protected by proximal ileostomies, yet healing often occurs even though the anastomosis is bathed by watery faecal matter. Naraynsinghet al. reported a prospective series of 58 unselected patient with left colonic anastomosis without a proximal diverting stoma. There was a case of anastomostic leakage and one mortality, unrelated to sepsis.

Till date, a number of authors have reported series of patients who underwent emergency left sided colon resection and anastomosis without intra-operative colonic lavage or a protecting proximal stoma and results are encouraging. We therefore wish to state that simple manual decompression of the colon to expel the SFM and exteriorizing the cut ends of the bowel while doing this, do prevent both faecal spillage into the peritoneum with its attendant peritonitis and wound contamination. This currently favoured treatment modality is safe and effective. It could be adopted in local setting and in developing countries for its immense socio-economic benefits; as the financial burden involved in staged procedures are not only high, also colostomies are often not acceptable for socio-cultural reasons.

V. Conclusion

Resection and primary anastomosis of left colonic obstruction can safely be performed without any form of bowel preparation or a diverting protecting colostomy. It has the merit of being a shorter and simpler procedure to perform without increasing the morbidity or mortality rates of the patients.

Table I (A & B) : Causes of the Left Colon Obstruction in the Study

<table>
<thead>
<tr>
<th>AGE DISTRIBUTION (YRS)</th>
<th>MALE</th>
<th>FEMALE</th>
<th>PERCENTAGES</th>
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<td>0</td>
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<tr>
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<td>100%</td>
</tr>
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</table>

Male : Female = 1.8 : 1 Mean = 49.5
B. Acute Sigmoid Volvulus

<table>
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<th>Male</th>
<th>Female</th>
<th>Percentages</th>
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<td>60-69</td>
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<tr>
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<td>2</td>
<td>31.25%</td>
</tr>
<tr>
<td>TOTAL</td>
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<td>4</td>
<td>100%</td>
</tr>
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</table>

Male : Female = 3 : 1  Mean = 76.4

Table II : Analysis of Post-Operative Outcome

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial wound infection</td>
<td>4</td>
</tr>
<tr>
<td>Anastomotic leakage</td>
<td>1</td>
</tr>
<tr>
<td>Intra abdominal abscess</td>
<td>0</td>
</tr>
<tr>
<td>Wound deliscence</td>
<td>0</td>
</tr>
<tr>
<td>Total of patients</td>
<td>42</td>
</tr>
</tbody>
</table>

References Références Referencias

19. Dirk VG, Patrick FO, Ushe AN, Peter JR, Johannes LP, Robert PAB. Complication after colorectal surgery without mechanical bowel preparation. JAM collsurf 2002; 194:40 – 47
A Study on the Receptor Status in Carcinoma Breast

By Dr. Ajil Jospeh, Dr. Prathvi Shetty & Dr. Praveen Kumar K
Father Muller Medical College, India

Abstract- Methods: 80 patients were included in this study, who were diagnosed with carcinoma breast and underwent surgery followed by receptor status analysis. This is a retrospective study wherein the receptor status of these patients were analysed to assess the incidence and type of receptor involved. Receptors studied include ER, PR and Her 2neu.

Result: from the above study it was concluded that, the percentage of patients with ER+/PR+ were 41.3%, ER+/PR- were 1.3%, ER-/PR+ were 1.3%, ER-/PR- were 53.8% and percentage of Her2neu positive were 8.8% while Her2neu negative were 91.3%. Percentage of patients with triple negative receptor status was 62.5%.

Conclusion: from this study it can be concluded that most patients presenting to our hospital have ER, PR and Her 2neu NEGATIVE STATUS which has a poor prognosis and high mortality.

GJMR-I Classification: NLMC Code: WP 460

Strictly as per the compliance and regulations of:
A Study on the Receptor Status in Carcinoma Breast

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Conclusion: from this study it can be concluded that most patients presenting to our hospital have ER, PR and Her 2neu NEGATIVE STATUS which has a poor prognosis and high mortality.

I. Introduction

Breast cancer is the most common cancer in women and is the leading cause of death for women aged 20 to 59 years.(1),(2) It accounts for 26% of all newly diagnosed cancers in females and is responsible for 15% of the cancer-related deaths in women.(3)

In the 1970s, the probability that a woman in the United States would develop breast cancer was estimated at 1 in 13; in 1980 it was 1 in 11; and in 2004 it was 1 in 8. Cancer registries in Connecticut and upper New York State document that the age-adjusted incidence of new breast cancer cases had increased since the mid-1940s. (3)

The median age of presentation was 49 years of age. Infiltrating ductal carcinoma was the commonest histopathological variant (81.40%) followed by medullary carcinoma (10.36%) and mucinous carcinoma (2.74%). Triple negative were found to be the commonest group comprising 39.4% of all the cases followed by ER and PR both positive.(4) ER/PR negative patients are associated with higher mortality.

The aim of this study is to assess the receptor status of patients with carcinoma breast who presented to father Mullermedical college in the last 1yr as I the recent past there has been a shift in receptor status to triple negative, which is associated with poor prognosis.

II. Materials and Methods

In this study, 80 patients were included, who underwent surgery for carcinoma breast. The specimen was subjected to histopathological examination to confirm the diagnosis and later was analysed for the receptor status. The receptor studied were ER, PR and Her 2 neu. They were analysed based on the frequency of incidence.

III. Results

The receptor status was tabulated based on frequency and percentage of each receptor in relation to the total study population. They were divided into 5 categories as shown below.

Table 1 : ER +ve and PR +ve

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
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<tr>
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<tr>
<td>YES</td>
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<tr>
<td>Total</td>
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Table 2 : ER +ve and PR –ve

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
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<td>NO</td>
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<tr>
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<tr>
<td>Total</td>
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</table>

Table 3 : ER –ve and PR +ve

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
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<tr>
<td>YES</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
</tr>
</tbody>
</table>

Table 4 : ER –ve and PR –ve

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
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<td>NO</td>
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<tr>
<td>YES</td>
<td>43</td>
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<tr>
<td>Total</td>
<td>80</td>
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</table>

Table 5 : Her 2 neu

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>NIL</td>
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<tr>
<td>YES</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
</tr>
</tbody>
</table>

Among the 80 patients studied, the percentage of patients with ER+/PR+ were 41.3%, ER+/PR- were 1.3% , ER-/PR+ were 1.3%, ER-/PR- were 53.8% and...
percentage of Her2neu positive were 8.8% while Her2neu negative were 91.3%. Percentage of patients with triple negative receptor status was 62.5%.

IV. Discussion

In our study, 80 patients were included who underwent surgery for carcinoma breast followed by receptor status analysis. Knowing the receptor status is of paramount importance as the treatment and prognosis of the patient depends on that. In India, there is an increased incidence of triple negative receptor status which has poor prognosis. Hence this study was undertaken in patients admitted in Father Muller Medical College in the last 1yr with carcinoma breast.

According to this study, ER and PR negative was the commonest with 53.8%. Her2neu negative patients were also high which was about 91.3%. second most common was ER and PR positive which was about 41.3%. triple negative receptor i.e ER and PR negative with Her2neu negative was found to be high which was about 62.5%.

Guinee VF stated that breast cancer is the most common cause of death in women aged 20-59yrs.\(^1\)

Jamel A et al observed that breast cancer accounts for 26% of all newly diagnosed cancers in females and is responsible for 15% of the cancer-related deaths in women.\(^2\)

F.Charles Brunicardi et al gave a probable statistics about the rise in incidence of breast cancer over the last three decades.\(^3\)

In another study it was observed that the median age of presentation was 49yrs. They also calculated the commonest type of carcinoma breast and the incidence of hormone receptor status.\(^4\)

A study in southeastern turkey concluded that the commonest receptor which is positive is PR followed by ER and HER2.\(^5\) this finding was contrary to the finding in our study.

In a study by Akhtar MI, 87% of the patients were triple negative, who had locally advanced tumor.\(^6\)

According to Lisa K Dunnwald, when compared to women with ER+/PR+ tumors, women with ER+/PR-, ER-/PR+ or ER-/PR- tumors experienced higher risks of mortality.\(^7\)

Caldarella A stated in her study that, Out of 1487 patients 70.3% were luminal A subtype (ER/PR +HER2-), 15.6% luminal B (ER/PR +HER2+), 8.1% triple negative (ER/PR-HER2-), 6.0% HER2+ (ER/PR-HER2+). The 3 year survival rates were 93.3%, 89.5%, 86.3%, 82.7% respectively.\(^8\)

V. Conclusion

From this study it can be concluded that, ER and PR negativity and her 2neu positivity are high among the population in Mangalore. The incidence of triple negativity, which is associated with high mortality is also high among the patients presented in Father Muller Medical College in the last 1yr. this finding correlate well with the findings in other parts of India where there is shift in receptor status toward triple negativity. Such patients require aggressive management of the disease for better survival.

References Références Referencias

Cardiorespiratory Fitness of Young Malawian Adults

By Enock Madalitso Chisati & Enipher Betenigo
University of Malawi, Malawi

Abstract - Background: The interpretation of cardiopulmonary fitness values is based on previously published standard reference values. In other situations, this may cause considerable inaccuracies since cardiorespiratory fitness in a specific population is determined by physical activity habits, geographic living area, body composition, genetics, and other factors, thus, reference values may differ significantly among various populations. The objective of this study was to determine cardiorespiratory values measured as maximal oxygen uptake for young Malawian adults and compare these values with the reference values established for other foreign populations.

Methods: This was a cross sectional study involving 133 (62 males and 71 females) apparently healthy young adults aged from 20 to 29 years randomly selected from the Malawian population. Participants performed the Rockport submaximal treadmill exercise test. Measures of body weight, post-exercise heart rate and time to walk one mile were obtained and used to predict VO2max as a measure of cardiorespiratory fitness.

Results: Mean VO2max was 53.9±12.5 mL.kg⁻¹.min⁻¹ for males and 38.8 for females indicating excellent cardiorespiratory fitness for males and good cardiorespiratory fitness for females according to the cooper institute data published by the American College of Sports Medicine (ACSM).

Conclusion: Cardiorespiratory fitness measured as VO2max for apparently healthy young Malawian adults have been provided and appear to be within similar ranges as those of some other foreign populations.

GJMR-I Classification: NLMC Code: WI 480

Strictly as per the compliance and regulations of:
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Conclusion: Cardiorespiratory fitness measured as VO2max for apparently healthy young Malawian adults have been provided and appear to be within similar ranges as those of some of other foreign populations.

I. INTRODUCTION

Cardiorespiratory fitness refers to the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity and eliminate fatigue products after supplying the oxygen. Cardiorespiratory fitness is commonly described in terms of the parameters ventilatory anaerobic threshold (VAT) and maximal oxygen uptake (VO2max). VAT defines a transition between aerobic and anaerobic metabolism and is closely linked to regular exercise training. VAT is therefore used as an additional parameter to assess cardiorespiratory fitness. VO2max is the highest rate of oxygen uptake obtained during strenuous, dynamical work involving large muscle groups. VO2max is the major parameter used to describe physical capacity.

Although VO2max is not the sole determinant of cardiorespiratory fitness, it is recognized as the gold standard measurement for cardiorespiratory fitness of an individual. Important information about gas exchange responses that can explain heart, lung, peripheral vascular, pulmonary vascular, and muscle abnormalities in individuals can be obtained from VO2max measurements. Maximal oxygen uptake can be used to design an exercise prescription for aerobic training in individuals; identify and refer patients with subtle abnormalities of gas exchange for further diagnostic studies to exclude early infectious complications; and evaluate physiological improvements resulting from an aerobic exercise training program. Thus, VO2max quantifies an individual's exercise capacity and provides valuable diagnostic and prognostic information about the cardiorespiratory system.

There is evidence that VO2max is clearly associated with levels of conventional cardiovascular risk factors even in people considered to be fit. To interpret results of VO2max, reference values are required. Reference values for VO2max in different populations have been reported, however no data exists for reference values for Malawian young adults. The aim of this study therefore was to determine mean VO2max values for young Malawian adults and compare these values with the reference values established for other foreign populations.

II. METHODS

a) Study design Study sample and recruitment

This was a cross sectional study in which 62 male and 71 female young adults (n = 133) aged 20 to 29 years participated. All participants were randomly recruited from the general population within communities around Blantyre, Malawi. Participants were contacted and asked for permission by the researcher who explained the nature of the study and assessed eligibility of those who agreed to participate. Informed consent was obtained from all eligible and willing individuals to participate in the study, which was approved by the University of Malawi’s College of Medicine Research and Ethics Committee (COMREC). The study is in conformity with the laws of Malawi and the Declaration of Helsinki.

b) Test equipment

A motorized treadmill (Trojan Marathon 200) interfaced with a microprocessor to control speed and...
time was used to conduct the exercise test. A Polar heart rate monitor (FT 4) was used to obtain post-exercise heart rate and time to walk a one mile equivalent on the treadmill. A body weight scale and a drop-down tape measure were used to obtain height and body weight measurements respectively.

c) Variables

i. Height and body weight

Height and body weight measurements for each participant were collected using a body weight scale and tape measure before the exercise test. Height measurements were obtained using a drop down tape measure fixed at about two metres on a wall. The participants removed their shoes before taking the measurement and stood with their backs against a wall while facing directly forward. The backs of their feet, calves, buttocks, upper backs and the backs of their heads were all in contact with the wall. The drop-down measuring device was lowered until it rested gently on the top of each participant’s head, after which the measurements were recorded. To obtain body weight measurements, the scale was set to zero before each participant stepped on it. The participants were asked to remove any heavy items from their pockets such as keys and any heavy clothing such as jackets, woolen jerseys, and shoes before stepping on the scale. Then the participants stepped on the scale and stayed still for a short time while facing straight ahead, after which the measurement was recorded. Height and body mass measurements were used to calculate body mass index (BMI) scores.

ii. VO2max and post-exercise heart rate

Maximal oxygen uptake (VO2max) was calculated as a measure of cardiorespiratory fitness. VO2max was predicted from the Rockport one mile submaximal exercise test10. The Rockport one mile submaximal exercise test has been proven to be a reliable and valid protocol in predicting VO2max in untrained subjects11,12. In addition, the Rockport one mile submaximal test lessens problems of exhaustion and injuries associated with exercise testing12. Maximal oxygen uptake scores were predicted from the Rockport one mile walking test formula: VO2max = 132.853 – (0.0769 x body mass) – (0.3877 x age) + (6.315 x gender) – (3.2649 x time) – (0.1565 x HR).

The procedure of the test started with a warm up of about eight to ten minutes. The warm up was aimed at familiarizing the participants with treadmill walking and also to ensure safety. After warming up, the participants were asked to walk 1.6 kilometres (one mile) as fast as possible on a motorized treadmill, without jogging or running. The participants’ post-exercise heart rates (PoExHR) and times to complete the one mile distance were recorded using a Polar heart rate monitor. To obtain post-exercise heart rates, the participants each wore a Polar H7 Bluetooth smart heart rate sensor secured with a strap around the chest and a heart rate monitor watch on the wrist while exercising. The sensor, which contains a transmitter rested below the breast, detected the electrical activity of the heart and transmitted the information to the monitor watch where it was displayed. Time taken by each participant to complete one mile was also displayed on the monitor watch and was recorded immediately after the exercise test.

The treadmill test was performed twice by each participant to obtain an average heart rate for calculating VO2max. An active recovery period of two to five minutes was allowed immediately after the first test in preparation for the second test. The exercise tests were done individually. Each participant was scheduled for his or her own time for the exercise.

d) Data analysis

IBM SPSS 21 was used to analyse the data. Descriptive statistics with mean and standard deviation were used to characterize data variables. Linear regression analysis was applied to analyse correlations between age and VO2max, as well as age and time to complete the one mile equivalent on a treadmill. All statistical tests were two - sided and $p$ values of $\leq 0.05$ were considered statistically significant.

III. Results

Baseline characteristics of participants are presented in Table 1. The mean value for VO2max in Malawian young adults was higher in males compared to females (53.9 mL.kg-1.min-1 versus 38.8 mL.kg-1.min-1) (Table 2). When compared to other foreign populations, VO2max of young Malawian males was comparable to that of young Norwegian males (53.9 mL.kg-1.min-1 versus 54.0 mL.kg-1.min-1), whereas VO2max for young Lithuanian males was lower (40.4 mL.kg-1.min-1) compared to both Malawian and Norwegian males. Norwegian females had a higher VO2max mean value (42.9 mL.kg-1.min-1) compared to both Malawian females (38.8 mL.kg-1.min-1) and Lithuanian females (34.7 mL.kg-1.min-1) (Table 3).

VO2max was inversely and linearly related to age in both Malawian males (VO2max = 100.161 – 1.970 x Age) and females (VO2max = 72.025 – 1.339 x Age). An increase of 1 year in age was related to an average decrease of 1.97 mL.kg-1.min-1 in VO2max for males and 1.339 mL.kg-1.min-1 in VO2max for females (Figure 1). About 53% of an individual’s decrease in VO2max could be explained by a related increase in age for males ($R^2 = 0.538$). Whereas in females, a decrease of 37% in an individual’s VO2max could be explained by a related increase in age ($R^2 = 0.378$). Similarly, VO2max was inversely and linearly related to time to complete the 1 mile test in both male (VO2max = 70.402 – 0.133 x PoExHR) and female (VO2max = 56.836 – 0.148 x PoExHR) Malawian young adults. An increase of 1
minute in time to complete 1 mile distance was related to an average decrease of 0.133 mL.kg⁻¹.min⁻¹ in \( VO_{2\text{max}} \) for males and 0.148 mL.kg⁻¹.min⁻¹ for females (Figure 2). About 5% of an individual's decrease in \( VO_{2\text{max}} \) could be explained by a related increase in time to complete 1 mile \( [R^2(\text{males}) = 0.057; R^2(\text{females}) = 0.051] \).

**Table 1** : Baseline Characteristics of Participants

<table>
<thead>
<tr>
<th></th>
<th>All Subjects (n=133)</th>
<th>Male Subjects (n=62)</th>
<th>Female Subjects (n=71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>24.2 ± 5.2</td>
<td>23.5 ± 4.7</td>
<td>24.8 ± 5.5</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>161.9 ± 7.9</td>
<td>167.6 ± 6.5</td>
<td>156.9 ± 5.3</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>58.5 ± 9.2</td>
<td>60.8 ± 7.9</td>
<td>56.4 ± 9.8</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>22.3 ± 3.1</td>
<td>21.6 ± 2.4</td>
<td>22.9 ± 3.5</td>
</tr>
</tbody>
</table>

All data are in mean ± SD; SD = standard deviation; BMI = body mass index.

**Table 2** : Exercise Response Parameters Stratified by Gender

<table>
<thead>
<tr>
<th></th>
<th>Total (n = 133)</th>
<th>Male (n = 62)</th>
<th>Female (n=71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( VO_{2\text{max}} ) (mL.kg⁻¹.min⁻¹)</td>
<td>45.9±14.4</td>
<td>53.9±12.5</td>
<td>38.8±12.0</td>
</tr>
<tr>
<td>PoExHR (bpm)</td>
<td>122.7±20.3</td>
<td>123.7±22.4</td>
<td>121.8±18.4</td>
</tr>
<tr>
<td>1 mile time (min)</td>
<td>15.8±3.5</td>
<td>14.2±3.2</td>
<td>17.0±3.2</td>
</tr>
</tbody>
</table>

All data are in mean ± SD; mL.kg⁻¹.min⁻¹ = millilitres per kilogram per minute, PoExHR = post-exercise heart rate, 1 mile time = time taken to walk 1 mile distance, bpm = beats per minute.

**Table 3** : Comparison of Mean Maximum Oxygen Uptake (\( VO_{2\text{max}} \); mL.kg⁻¹.min⁻¹) Values for Men and Women in Our Study and Normative Values for Other Foreign Populations

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Our Study (Malawian population)</td>
<td>20 – 29</td>
<td>53.9±12.5</td>
<td>38.8±12.0</td>
</tr>
<tr>
<td>Lithuanian Population</td>
<td>20 – 29</td>
<td>40.4±5.8</td>
<td>34.7±6.8</td>
</tr>
<tr>
<td>Norwegian Population</td>
<td>20 – 29</td>
<td>54.0±8.7</td>
<td>42.9±7.6</td>
</tr>
</tbody>
</table>

All data are in mean ± SD

**Table 4** : Comparison of Mean Maximum Oxygen Uptake (\( VO_{2\text{max}} \); mL.kg⁻¹.min⁻¹) Values for Men and Women in Our Study and Normative Values by Percentiles Reported by the Cooper Institute.

<table>
<thead>
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<th></th>
<th>Our Study</th>
<th>Cooper Institute data</th>
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<tr>
<td></td>
<td>mean±SD</td>
<td>95%CI</td>
</tr>
<tr>
<td></td>
<td>20ʰ</td>
<td>50ʰ</td>
</tr>
<tr>
<td>Male</td>
<td>53.9±12.5</td>
<td>51.0 – 56.9</td>
</tr>
<tr>
<td>Female</td>
<td>38.8±12.0</td>
<td>36.0 – 41.8</td>
</tr>
</tbody>
</table>

20ʰ and 80ʰ percentile values represent poor and excellent cardiorespiratory fitness categories, respectively, as published by the American College of Sports Medicine (ACSM)\(^{13}\)
Figure 1: Relationship Between Age and VO\textsubscript{2max} in Both Males and Females: VO\textsubscript{2max}(Males) = 29.18 − 0.095 × Age ($R^2 = 0.153$) And VO\textsubscript{2max}(Females) = 27.658 − 0.076 × Age ($R^2 = 0.113$)

Figure 2: Association Between VO\textsubscript{2max} and Time to Complete 1 Mile Distance in Both Male and Female Young Adults (VO\textsubscript{2max} = 1.07 × Time, $R^2 = 0.89$).
The purpose of the study was to determine mean VO2max values for young Malawian adults aged 20 to 29 years. Results of this study present VO2max reference values for young Malawian adults from a randomly selected sample of apparently healthy young men and women (Table 2). It has been reported that women achieve VO2max scores of about 15% to 30% below those of male counterparts in healthy populations\textsuperscript{3,14,15}. The present study has demonstrated that VO2max relative to body mass was 28% higher in young Malawian men than in women. Findings from the present study are consistent with previous studies that found lower VO2max in females compared with males in healthy participants\textsuperscript{15,16}. Lower values of VO2max in women are a result of lower haemoglobin and blood volume, smaller stroke volume and smaller muscle mass compared to males\textsuperscript{3}.

In relation to cardiorespiratory fitness values for other foreign populations, the present study has revealed that young Malawian and Norwegian males have almost similar VO2max values, while Malawian females have lower VO2max values of about 9% compared to Norwegian females (Table 3). The difference in VO2max between Malawian and Norwegian females can partly be explained by a smaller difference of about 21% between male and female Norwegians\textsuperscript{5} compared to a slightly higher difference in VO2max of 28% between Malawian males and females. In addition, it was observed that young Malawian males had a higher VO2max of about 25% compared to young Lithuanian males. Similarly young Malawian females had a slightly higher VO2max of about 11% compared to young Lithuanian females. It has been reported that VO2max in healthy Lithuanians is approximately 9 – 22% lower compared to other populations\textsuperscript{6} which could somewhat explain the relatively low VO2max values compared to young Malawian adults. With respect to normative cardiorespiratory fitness values published by the American College of Sports Medicine (ACSM)\textsuperscript{13}, data provided by the Cooper Institute, young Malawian men in the current study fell above the 80\textsuperscript{th} percentile of VO2max which translates to excellent cardiorespiratory fitness. On the other hand, young Malawian females fell slightly above the 50\textsuperscript{th} percentile of VO2max which translates to good cardiorespiratory fitness. This impressive cardiorespiratory fitness could be attributed to physical activity habits of young Malawians such as walking long distances to work-places which increase their physical capacity.

The age related decline in cardiorespiratory fitness has been demonstrated in a number of investigations\textsuperscript{1,6,8}. In the present study, the age related decline in VO2max was 0.09 mL kg\textsuperscript{-1} min\textsuperscript{-1} per year in males and 0.11 mL kg\textsuperscript{-1} min\textsuperscript{-1} in females (Figure 1). A decline in VO2max with increasing age has been attributed to central (cardiac) and peripheral (circulation and oxygen transport) factors\textsuperscript{17}. Central and peripheral factors in VO2max decline with aging have been attributed to several mechanisms. Among others, mechanisms such as the aging process itself (senescence); the decline of cardiac function; an impaired efficiency of oxygen extraction and utilization; a decreased muscle mass concurrent with increasing body fat; superimposed pathological processes; a decreased volume and efficiency of physical activity; and hereditary factors have been proposed to contribute to a decline in VO2max with age\textsuperscript{18}. However, despite the apparent effect of age on aerobic endurance, strong evidence indicate that habitual physical activity regardless of age exerts greater influence on aerobic endurance than chronological age per se\textsuperscript{17}. Contrary to other western studies that reported a somewhat higher decline in VO2max of approximately 0.34 – 0.36 mL kg\textsuperscript{-1} min\textsuperscript{-1} per year for males and 0.30 – 0.32 mL kg\textsuperscript{-1} min\textsuperscript{-1} per year in females within the 20 – 29 year age range\textsuperscript{8,19}, the present study has revealed a smaller decline in VO2max of 0.09 mL kg\textsuperscript{-1} min\textsuperscript{-1} per year in males and 0.11 mL kg\textsuperscript{-1} min\textsuperscript{-1} in females. The smaller age related decline in VO2max for both males and females in the present study could partly be explained by the active lifestyle habits among Malawian populations compared to Western populations. In Malawi, a large percentage of the population is involved in manual labour and agricultural operations which demand considerable physical capacity. Lifestyle activities such as walking long distances to work-places, pushing heavy levers in industries, land preparation and post-harvest processing of farm produce increases physical capacity among Malawians, which may result in increased aerobic endurance compared to Western populations.

The study revealed a strong inverse linear association between VO2max and time to complete the 1 mile equivalent (exercise duration) on a treadmill in both male and female young Malawian adults (Figure 2). Almost 89% of an individual’s variation in VO2max could be explained by a related change in time to complete 1 mile equivalent. Exercise duration is one of the parameters that determine the intensity of an exercise. Exercise intensity can be manipulated by reducing the time to complete an exercise bout thus increasing the intensity of the exercise. Results from this study are consistent with other studies that revealed higher VO2max scores associated with higher aerobic intensities\textsuperscript{20–22}. VO2max is considered to be a valid tool for measuring exercise intensity and a predictor of long time health\textsuperscript{23}; however the method for obtaining VO2max is complicated and not feasible in a limited resource rural clinical setting. Since VO2max generally correlates significantly with maximum heart rate (HRmax)\textsuperscript{24}, VO2max can easily be elucidated from HRmax measures. HRmax measurements to
predict $V_{O_{2max}}$ are more practical in a limited resource rural clinical setting since they could be obtained through pulse rate measurements. However measuring HRmax through pulse during exercise poses a challenge. A strong linear association between $V_{O_{2max}}$ and time to complete the 1 mile equivalent revealed from the current study suggests that the 1 mile time is a good proxy for $V_{O_{2max}}$ and may serve as a valid field test in limited resource settings like Malawi where treadmills may not be available. However further research on the same is required to validate this claim.

V. STUDY LIMITATIONS

The study has limitations in terms of generalizability to the total young adult population in Malawi. Like any other age group, young adults are a very heterogeneous population. While the proposed study sample was quite diverse, the fact remains that certain segments of the young adult population in Malawi, like those from remote and rural areas, were not included. In addition, any time a data collection instrument is used, results are subject to reliability and validity of the instrument. Although information about the validity and reliability of Rockport 1 mile submaximal exercise test to predict $V_{O_{2max}}$ is known, the test has some limitations. Since participants had to walk as fast as possible, the accuracy of the test in predicting $V_{O_{2max}}$ depended on the pacing ability and motivation of the participant. Only subsequent research with other audiences from a wide range of geographical areas and other instruments will help further our understanding of cardiorespiratory fitness of young Malawian adults.

VI. CONCLUSION

The study offers cardiorespiratory fitness values measured as $V_{O_{2max}}$ for apparently healthy young Malawians aged 20 to 29 years. Results from this study show that $V_{O_{2max}}$ values for young Malawian adults seem to be within similar ranges as those of some other foreign populations. With respect to $V_{O_{2max}}$ values published by the American College of Sports Medicine (ACSM)13, $V_{O_{2max}}$ values of young Malawian males fell slightly above the 80th percentile indicating excellent cardiorespiratory fitness while those of young Malawian females fell slightly above the 50th percentile indicating good cardiorespiratory fitness. Rehabilitation clinics and exercise testing laboratories in Malawi may use these results in promoting physical activity in the general population as well as evaluating exercise capacity for young Malawian adults.

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