

## CURRENT VIEWS ON ULTRASONOGRAPHY IN THE MANAGEMENT OF PYOGENIC LIVER ABSCESS-CHALLENGE TO PRACTITIONERS IN SUB-SAHARAN AFRICA.

\*S. A. Erinle, \*\*A. K. Inikori

Department of \*Radiology, Federal Medical Centre, Bida, \*\*Department of Radiology, University of Ilorin Teaching Hospital, Ilorin, Nigeria.

### ABSTRACT

The aim of this review of the recent literature on the current practice in the management of pyogenic liver abscess (PLA) is to highlight the important roles radiological procedures, particularly ultrasonography (US) now play in it. US equipment is now widely available in many African nations, yet not much is being done to embrace this current line of management. This is evidenced by the dearth of published work in this area from especially sub-Saharan Africa. It is being suggested that general surgeons and radiologists in this region collaborate more to reduce the cost of treating all cases by operations.

**Key words:** Ultrasonography, diagnosis, treatment, pyogenic liver abscess.

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### INTRODUCTION

PLA is a clinical entity for which prompt recognition and treatment are essential to achieve favorable outcome<sup>1</sup>. It is more common in males and in the right lobes<sup>2</sup>, though some have found equal male: female ratio<sup>3</sup>. It occurs more commonly single than multiple<sup>4</sup>. Abdominal pain, usually located in the right upper quadrant and jaundice are the commonest clinical presentations. Abnormal pain is more in single while jaundice is commoner in multiple abscesses<sup>5</sup>. Metallic cough can be found in patients in whom hepatobronchial fistula has occurred<sup>6</sup>. In majority of patients, there is no known cause but biliary disease is the commonest<sup>4,7-9</sup>. The commonest organisms isolated are *E. Coli* and *Klebsiella spp.*<sup>4,5</sup>, though *staphylococcus aureus* is common among children less than 12years<sup>10,11</sup>. Though primary hepatocellular cancer<sup>12</sup> and hepatic metastases<sup>13</sup> can mimic PLA, especially in the elderly, a filling defect in the liver should not be attributed to metastatic malignancy where there is no known primary site until PLA has been excluded by aspiration under US or computed tomography (CT) guidance<sup>14</sup>.

US is invaluable both in the diagnosis and treatment of PLA (figure 1&2). The current practice in many standard hospitals is to do US- or CT-guided percutaneous needle aspiration to confirm diagnosis, followed by percutaneous catheter drainage under similar guidance, with or without intracavitary antibiotic infusion<sup>5,15-17</sup>.

US has the advantage over CT of being more readily available, cheaper, absence of ionizing radiation and the possibility of doing bedside examination using mobile units. Liver US can be readily done because of the closeness of the organ to the right upper anterolateral abdominal wall. Though the overlying ribs may partly obscure visualization by their acoustic shadows, the use of appropriate transducer size, sound array and frequency will permit adequate examination of the entire liver using the technique of sub costal and intercostal scanning. There is no evidence in the literature that the current trend in the management of PLA is being embraced by practitioners in sub-Saharan Africa. This review is to highlight what obtains all over the world and to challenge practitioners in sub-Saharan Africa to accept and practice it.

### Diagnosis of PLA

The clinical presentations of PLA are varied. Typical symptoms include: right upper abdominal pain, jaundice, fever, sometimes with rigors and weight loss<sup>18</sup>. Cough can occur either from chest infection due to inadequate lung expansion or from hepatobronchial fistula<sup>6</sup>. Atypical presentations include fever of unknown origin especially in the elderly<sup>18</sup> and clinical features pointing to an underlying cause or associated diseases such as diverticular disease<sup>18</sup>, diabetes mellitus<sup>2,19</sup>, Crohn's disease<sup>20,21</sup> and occasionally proximal bowel perforation following foreign body ingestion<sup>4,22</sup>. A patient with myelodysplasia found to have PLA has been reported to present with cellulitis of the anterior abdominal wall<sup>23</sup>. Physical examination usually

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Correspondence: Dr S. A. Erinle  
E-mail: sundayadesubomi@yahoo.co.uk

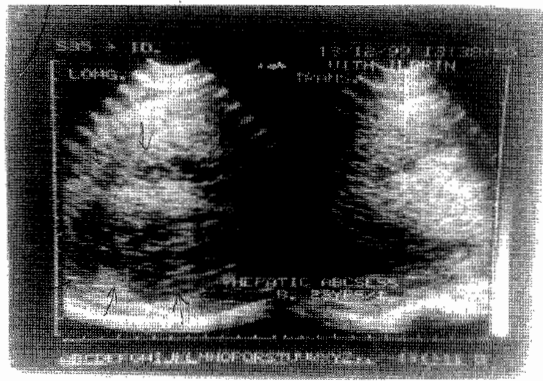


Figure 1

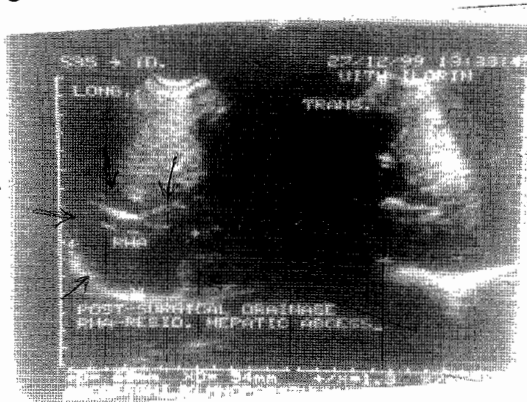


Figure 2

reveals an ill-looking patient, febrile to touch with right upper abdominal quadrant tenderness.

US plays very vital roles in the diagnosis of PLA. It has a sensitivity of about 100% in detecting liver abscesses<sup>24</sup>, and is therefore very useful in confirmation and localization of abscesses<sup>9,24</sup>, identifying multiple ones<sup>15</sup> and guiding needle aspiration which provides better bacteriological culture yield<sup>25</sup>. In a solitary abscess the degree of loculation can be easily identified and this influences the kind of treatment given<sup>29,19</sup>. US is equally valuable in children. In a series, it was positive in all the paediatric cases of PLA studied<sup>10</sup>. Another important use is in the elucidation of the differential diagnosis of PLA such as hepatoma<sup>12, 26</sup>, hepatic metastases<sup>13</sup>, liver cirrhosis<sup>27</sup>, benign hepatic masses in children<sup>28</sup>, and hepatic tuberculoma<sup>25</sup>. Some of these liver diseases are also known to be associated with or to present with PLA<sup>25-27,29</sup>. Biliary disease, the most common known cause of PLA<sup>7,8</sup> can also be assessed to a good extent by US. Other disease conditions that can be associated with PLA and for which US can give good evaluation include pancreaticobiliary malignancy<sup>30</sup>, with or without hepatolithiasis, cholelithiasis<sup>9</sup>, intrahepatic perforation of the gallbladder<sup>32</sup> silent colonic

tumours<sup>33,34</sup>, polycystic liver disease<sup>35</sup>, pregnancy<sup>36</sup> and ventriculoperitoneal shunt<sup>37</sup>.

### Treatment of PLA

The treatment for solitary PLA is now generally regarded as non-operative. US- guided percutaneous catheter drainage combined with intravenous antibiotics is found to be effective in most cases<sup>4,9, 38</sup>. It is said to have a success rate of 90% and above in some cases<sup>4,39</sup>. This is equally true of childhood PLA<sup>40</sup>. In a series including 18 paediatric cases antibiotic alone or in combination with needle aspiration was effective in most of the paediatric cases<sup>10</sup>. In another 10-year retrospective study of 52 patients, 41 (about 80%) had percutaneous drainage either by catheter or needle aspiration or a combination of both and were successfully treated<sup>41</sup>. For less successful cases, it is suggested, as a second line treatment that the abscess cavity be irrigated with antibiotic containing fluid via the percutaneous catheter<sup>16,17,42</sup> though a possible complication of this is intrahepatic haematoma<sup>42</sup>. Treatment should be tailored to each patient, but majority can be successfully treated with percutaneous methods and antibiotics<sup>2,43,44</sup>. Even patients with multiple bilateral PLA have been successfully managed conservatively with antibiotics double (or multiple) catheter drainage and multiple aspirations<sup>20,45</sup>.

Though complications of PLA such as presence of a communication between the abscess cavity and the biliary tree have been regarded by some as reason for unsuccessful non-operative treatment<sup>46</sup>, some other workers have suggested that this should not change the treatment approach of percutaneous aspiration and drainage under US guidance<sup>47</sup>. Patients of PLA complicated by bronchobiliary fistula can also still be successfully treated by US- guided percutaneous drainage<sup>48</sup>.

### Amoebic Liver Abscess- The Closest Differential

Amoebic liver abscess (ALA) is the closest differential diagnosis to PLA. The clinical manifestations are very similar and the ultrasound findings almost same though some authors have suggested that ALA tends to be more rounded or oval with lower echogenicity and more homogenous internal echoes than PLA<sup>49</sup>. The non-bacteria-yielding abscess fluid culture and positive serology to *entamoeba histolytica* distinguishes ALA from PLA. Though it was thought that aspiration is hardly necessary with ALA because most patients responded to treatment with metronidazole<sup>50,51</sup>, recent evidences suggest that multiple abscesses are becoming commoner requiring abscess aspiration or catheter

drainage in addition to intravenous and intraluminal metronidazole treatment<sup>52,53</sup>.

#### Limitation Of Us-Guided Percutaneous Drainage

US may be inadequate in evaluating gas-containing liver abscesses because of ring-down artifacts, acoustic shadows and poorly defined margins which may lead to underestimation of abscess size, difficulty in identifying loculations and erroneous interpretation of multiplicity of abscess cavities<sup>54</sup>. Also when there is a strong indication of perforation by a foreign body<sup>4,22</sup>, surgery is the treatment of choice. Factors that can predict failure of initial non-operative treatment are: unresolving jaundice, renal impairment, multiloculation of abscess, rupture on presentation and biliary communication<sup>9</sup> as well as a lack of clinical response to percutaneous drainage in 4-7 days<sup>18</sup>.

#### CONCLUSION

Radiological imaging, especially US now plays very prominent roles in the management of PLA. US-guided percutaneous procedures should be more embraced by practitioners in sub-Saharan Africa especially in the West African sub region in the management of diseases. This calls for greater collaboration between general surgeons and the radiologists in this area. Such cooperation and interrelationships will surely reduce the economic burden of treating all or most cases of PLA by open abdominal operations.

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