ABDOMINAL BRUITS

I. THE FINDING

Abdominal bruits are murmurs heard during auscultation of the abdomen. Like any murmur generated outside the four heart chambers, abdominal bruits may extend beyond the confines of the first and second heart sounds from systole into diastole (i.e., they may be “continuous”; see Chapter 39). Most bruits are detected in the epigastrium or upper abdominal quadrants.

II. CLINICAL SIGNIFICANCE

A. BRUITS IN HEALTHY PERSONS

Bruits occur in 4% to 20% of healthy persons.\textsuperscript{1–5} Abdominal bruits are more common in those younger than 40 years than in older persons.\textsuperscript{1,4–6}
Characteristically, the abdominal bruit of a healthy individual is systolic, medium- to low-pitched, and audible between the xiphoid process and umbilicus. Only rarely does it spread to the patient’s sides, in contrast to abnormal bruits, which are often loudest away from the epigastrium (see later). Arteriograms reveal that the most common source for the normal abdominal bruit is the patient’s celiac artery.

B. RENOVASCULAR HYPERTENSION

In patients with renal artery stenosis and renovascular hypertension, an abdominal bruit may be heard in the epigastrium, although the sound sometimes radiates to one side. In one study of patients referred because of severe hypertension that was difficult to control—a setting suggesting renovascular hypertension—the finding of a systolic/diastolic abdominal bruit was virtually diagnostic for renovascular hypertension (likelihood ratio [LR] = 38.9, EBM Box 49-1). In contrast, the finding in similar patients of any abdominal bruit (i.e., one not necessarily extending into diastole) is less compelling (LR = 5.6), probably because they also occur in persons without renovascular hypertension (see “Bruits in Healthy Persons”).

The abdominal bruit of renovascular hypertension, however, does not always originate in the renal artery. In one study of patients undergoing surgery for renal artery stenosis, intraoperative auscultation localized the bruit to the

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**Box 49-1**

**Auscultation of Abdomen**

<table>
<thead>
<tr>
<th>Finding (Ref)</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>Likelihood Ratio if Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abdominal bruit—any</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detecting renovascular hypertension²,³,⁷,⁸</td>
<td>27–56</td>
<td>89–96</td>
<td>5.6</td>
</tr>
<tr>
<td>Detecting abdominal aortic aneurysm⁹</td>
<td>11</td>
<td>95</td>
<td>NS, NS</td>
</tr>
<tr>
<td><strong>Abdominal bruit—systolic/diastolic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detecting renovascular hypertension¹⁰</td>
<td>39</td>
<td>99</td>
<td>38.9</td>
</tr>
</tbody>
</table>

NS, not significant; likelihood ratio (LR) if finding present = positive LR; LR if finding absent = negative LR.

*Diagnostic standard: For renovascular hypertension, renal angiography,²,³,⁷,⁸ sometimes combined with renal vein renin ratio >1.5¹⁰ or cure of hypertension after surgery;⁷ for abdominal aortic aneurysm, see EBM Box 47-2 in Chapter 47.*
renal arteries as the sole source only about half the time.\(^{1}\) In the remaining patients, other vessels alone or with the renal artery generated the sound. Possibly, bruits in these patients are general markers of vascular disease, just as the finding of a carotid bruit has been associated with disease in other distant vascular beds, such as the coronary vasculature.\(^{11}\)

C. OTHER DISORDERS

Harsh, epigastric or right upper quadrant bruits (systolic and continuous) have been repeatedly described in patients with hepatic malignancies\(^{12,13}\) and hepatic cirrhosis.\(^{12,14}\) In these patients, the sound may represent extrinsic compression of vessels by tumor or regenerating nodules, the hypervascular tumor, or portosystemic collateral vessels. Left upper quadrant bruits occur in patients with carcinoma of the body of the pancreas (8 of 21 patients in one study).\(^{15}\) Other rare causes of abdominal bruits are renal artery aneurysms,\(^{16}\) aortocaval fistulae,\(^{17}\) ischemic bowel disease,\(^{18}\) and celiac compression syndrome.\(^{19}\) Although an abdominal bruit is traditionally associated with abdominal aortic aneurysm, the finding had no diagnostic value in one study (LR not significant, see EBM Box 49-1).\(^{9}\)

HEPATIC RUB

In the absence of recent liver biopsy, the finding of a hepatic friction rub has been repeatedly associated with intrahepatic malignancy, either hepatoma or metastatic disease.\(^{13,20}\) In one study of tumors metastatic to the liver, 10% of patients had a hepatic friction rub.\(^{21}\)

BOWEL SOUNDS

I. THE FINDING

Most clinicians have great difficulty making any sense out of a patient’s bowel sounds, for two reasons: (1) Normal bowel sounds, from moment to moment, vary greatly in pitch, intensity, and frequency. One healthy person may have no
bowel sounds for up to 4 minutes, but when examined later may have more than 30 discrete sounds per minute.\textsuperscript{22} The activity of normal bowel sounds may cycle with peak-to-peak periods as long as 50 to 60 minutes,\textsuperscript{23} meaning that any analysis based on even several minutes of bedside auscultation is a very incomplete sample. (2) Bowel sounds generated at one point of the intestinal tract radiate widely over the entire abdominal wall.\textsuperscript{22,24} The sounds heard in the right lower quadrant, for example, may actually originate in the stomach. This dissemination of bowel sounds makes the practice of listening to them in all four quadrants fundamentally unsound, because, as an example, the left lower quadrant may be quieter than the left upper quadrant not because the descending colon is making less noise than the stomach, but instead because the entire abdomen has become quieter, at least for the moment the clinician is listening to the lower quadrant.

Most bowel sounds are generated in the stomach, followed by the large intestine and then the small bowel.\textsuperscript{25} The overall frequency of bowel sounds increases after a meal.\textsuperscript{26} The actual cause of bowel sounds is still debated; experiments with exteriorized loops of bowel in dogs show many intestinal contractions to be silent, although sound often occurs when contractions propel contents through a bowel segment that is not relaxed.\textsuperscript{22}

II. CLINICAL SIGNIFICANCE

Analysis of the bowel sounds has modest value in diagnosing small bowel obstruction. After experimental complete bowel obstruction in animals, bowel sounds are hyperactive for about 30 minutes before becoming diminished or absent.\textsuperscript{23} In patients with small bowel obstruction, clinical observation shows that about 40\% have hyperactive bowel sounds and about 25\% have diminished or absent bowel sounds.\textsuperscript{27,28} Consequently, because most patients with small bowel obstruction have abnormal bowel sounds, the finding of normal bowel sounds in a patient with acute abdominal pain argues somewhat against the diagnosis of bowel obstruction (LR = 0.4, see EBM Box 48-4 in Chapter 48).

A traditional finding of peritonitis is diminished or absent bowel sounds, although studies of patients with acute abdominal pain show this finding to be unreliable (see Chapter 48).

REFERENCES


Auscultation of the Abdomen


