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Epigastric Bruit: Prevalence and Clinical Significance in a Student Population

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Localized epigastric bruit is the sole physical sign in celiac artery compression syndrome,^{1,2} an

association of abdominal symptoms with extrinsic compression of the celiac axis at its origin from the anterior aspect of the abdominal aorta immediately below the diaphragm. This extrinsic compression may be from either the median arcuate ligament of the diaphragm or from strands of the celiac plexus.³

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The presence of an epigastric bruit must be a sensitive indicator of celiac artery compression when found in conjunction with a compatible pattern of abdominal symptoms, but it is of low specificity, since a similar bruit may be found in healthy people.

The prevalence of an epigastric bruit has been variously reported as 6.5 percent,⁴ 15.9 percent,⁵ 27 percent, and 31 percent,⁶ with no difference in prevalence between men and women. This author conducted a study in which statistically significant differences in prevalence were found between male and female patients at all ages from 10 to 54 years, with peak prevalence occurring in both sexes in the group aged 15 to 34 years.⁷ This study, performed on a family practice population, showed the prevalence of an epigastric bruit to be 24.7 percent in women and 8.5 percent in men aged 15 to 24 years ($P < .02$).

A further study was undertaken to elucidate this conflicting evidence of distribution of prevalence between the sexes and to determine any influence that sex, physique, blood pressure, and morbidity might exert. A student population was chosen for examination, since almost all students are of the age under discussion and are basically healthy and free from degenerative disease.

Methods

Two hundred sixteen consecutive, unselected students between the ages of 15 and 24 years who were attending the Student Health Service at Queen's University were examined by a single physician. During the interview and after a full explanation was given and the patient's verbal consent obtained, auscultation of the abdomen was performed with the patient supine, comfortably at rest on an examination table in one of two adjoining quiet rooms.

The same bell-diaphragm binaural stethoscope was used for each observation, only the bell being employed. Observations were made during normal hours of work, 9 AM to 12 noon and 1 PM to 4:30 PM daily, weekdays only. Each patient's age,

Table 1. Prevalence of Epigastric Bruit

	No. With Bruit (%)
Female	27/118 (23)
Male	16/98 (16)
Total	43/216 (20)

sex, height, weight, blood pressure, and diagnosis were recorded together with the presence or absence of an epigastric bruit and its grade and timing, if present.

The only bruit accepted for the purposes of the study was one audible in the midline epigastrium with the patient supine, localized to the epigastrium without conduction proximal or distal along the aorta or to either flank, and audible without pressure of the stethoscope on the anterior abdominal wall.

A bruit was graded as follows: grade 1—faint, but definite; grade 2—definite, but not loud; grade 3—loud. When there was any doubt as to the presence of a bruit, it was recorded as absent. The results were tabulated (Table 1) and subjected to tests of probability (χ^2) to determine statistical significance.

Results

A bruit satisfying the study criteria was heard in 43 patients (20 percent), 27 female (23 percent) and 16 male (16 percent). The difference in prevalence between male and female patients is not statistically significant ($P > .10$).

Thirty-five bruits were grade 1, eight were grade 2. No grade 3 bruits were heard, and all

bruits were systolic and loudest in expiration.

The presence or absence of a bruit bore no relationship to physique, blood pressure, or morbidity. The study population was composed of individuals whose blood pressures were normal, and virtually all had weights within the desirable range for height, age, and sex.

Discussion

Celiac artery compression syndrome is something of an enigma. Some would doubt its very existence, since the conventional view is that more than one visceral artery must be completely occluded before bowel ischemia may develop. How then, the argument runs, can partial blockage of one vessel produce the bizarre and sometimes severe abdominal symptoms found in patients?^{8,9} The diagnostic dilemma is further intensified by typical appearances of celiac artery compression found in patients undergoing aortography for totally unrelated reasons.^{10,11} The answer is beyond the scope of this paper, which simply reports the results of a study showing that an epigastric bruit may be heard on auscultation of the abdomens of a sizable proportion of a healthy population. A vascular bruit must presumably represent turbulence in the flow within a vessel. Perhaps there are variations in the angle at which the celiac artery comes off the aorta, and this results in the median arcuate ligament of the diaphragm compressing the artery at certain stages of the respiratory cycle. The possibilities for conjecture are endless, but they do not in any way detract from the fact that an epigastric bruit may be safely ignored in the absence of unexplained abdominal pain.

Why should this study show equal prevalence of a bruit in young men and women, when a previous one found statistically significant differences? Since both studies were conducted in an identical fashion by the same observer, the answer must be that the second study was more accurate or was biased by intraobserver variation, or that some characteristic of the study population has changed. Intraobserver variation is unlikely in

view of the agreement in both studies for prevalence in women, the studies differing mainly in the observed frequency with which a bruit was found in young men.

There is no reason to believe that a student population might possess any special physical characteristics sufficient to distinguish it from any group of young patients in a general practice in such a way as to influence these observations. No other studies of epigastric bruit prevalence have surveyed sizable populations of young adults, and this study is of a larger sample of male patients than the previous one. It is therefore more likely to be accurate.

Summary

A systolic epigastric bruit is a common finding on auscultation of the abdomens of healthy young people. It is loudest during expiration and is of no clinical significance whatsoever.

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