terval in normal hearts, but is excessively prolonged when the sinus node is diseased or damaged. A prolonged sinus node recovery time strongly suggests decreased automaticity of the pacemaker cells in the sinus node or a delay in the exit of electrical impulses from the node into the atria due to disease, usually fibrosis, in the perinodal tissue. The computation of the sinus node recovery time—that is, recovery time minus the baseline PP interval—corrects for the fact that the sinus node recovery time is directly related to the baseline PP interval (the slower the resting heart rate, the longer the recovery time).

The normal sinus node recovery time, corrected sinus node recovery time and response to atropine effectively rule out an intrinsically dysfunctional sinus node as an explanation for the patient's findings.[1-9]

Vasodepressor, or vasovagal, syncope is a common phenomenon, but does not adequately account for this patient's symptoms. Vasodepressor syncope typically occurs in situations that a patient finds distasteful, is characterized by a presyncopal phase in which the patient anticipates losing consciousness and occurs in the standing or sitting position, only rarely in the recumbent position. Peripheral pooling of venous blood is the primary mechanism leading to hypotension. Vagal-induced bradycardia contributes to the decreased cerebral perfusion, but sinoatrial pause and asystole are not part of the syndrome.[10] Vagovagal syncope occurs when cardiac asystole occurs as a result of a reflex that is located entirely within the vagus nerve. However, this patient has no known lesion that might account for this phenomenon such as an esophageal diverticulum prone to distention, glossopharyngeal neuralgia, cardiospasm or a lesion in the larynx, pleura or peritoneum.[10]

In short, the patient in the case reported here does not seem to fit the description of patients previously classified as having one of the variants of cardiac syncope. Although it is doubtful that the dysrhythmia described is unique, an extensive search of the literature failed to reveal a case of recurrent sinoatrial pauses, asystole and seizures in an otherwise healthy child with a structurally normal heart and a normally functioning sinus node when tested electrophysiologically.

Autonomic imbalance appears to be at the root of this child's dilemma. Excessive vagal tone or diminished sympathetic tone at the sinus node could explain the findings as could excessive cholinergic sensitivity or diminished adrenergic sensitivity of his sinus node pacemaker cells. Aside from the fact that autonomic control of his sinus node could be blocked by administering atropine and propranolol, little is known of his intrinsic cholinergic control mechanisms.

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Peutz-Jeghers Syndrome With Cervical Adenocarcinoma and Enteritis Cystica Profunda

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THE PEUTZ-JEGHERS SYNDROME, one of the familial polyposes syndromes, is an autosomal dominant condition characterized by mucocutaneous melanin pigmentation and gastrointestinal polyps.[1,2] It is now recognized that there is a high risk that a distinctive ovarian tumor described as a sex cord tumor with annular tubules may develop in cases of this disorder.[3,4] Lately, however, a rare, well-differentiated adenocarcinoma of the cervix with a very poor five-year survival rate has also been reported with this condition.[5,6] An equally rare intestinal lesion known as enteritis cystica profunda is occasionally found in patients with Peutz-Jeghers syndrome.[7] This latter lesion is characterized by mucosal glands and mucinous cysts in the small and large bowel that penetrate the tunica muscularis. It sometimes involves the entire wall up to the serosa and, thus, has been mistaken for adenocarcinoma. We report the first case of Peutz-Jeghers syndrome that is associated with cervical adenocarcinoma and enteritis cystica profunda.

Report of a Case

The patient, a 29-year-old Latin-American woman, was admitted for weakness, dizziness and lower abdominal pain for one week. She gave a history of irregular and prolonged menstruation since the age of 16. Three months before admission, she had a spontaneous abortion of a 10-week-old pregnancy for which she required transfusion of two units of blood. She later had daily vaginal bleeding with lower abdominal pain for one month, culminating in this admission.

She was very pale, with a hemoglobin of 5.8 grams per dl and hematocrit of 17%. Pigmentation about the

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mouth, on the lips, buccal cavity and on the fingers and toes was noted. On pelvic examination there was an enlarged and tender uterus associated with a mass of the left adnexa. Copious blood-tinged mucus was noted in the vagina. Fractional endometrial and endocervical scrapings were obtained, which on histologic examination showed adenocarcinoma. A laparotomy was done because of the left adnexal mass, which turned out to be the enlarged cervix. Several intraluminal polypoid masses were found in the intestines, some large enough to cause obstruction, one of which was removed. A biopsy was done of a small intestinal serosal implant, which was reported as probable metastatic carcinoma from the cervix. After this, the patient had external pelvic irradiation with radium-implant therapy, followed by a total abdominal hysterectomy and bilateral salpingo-oophorectomy. Two segments of small intestine with large polyps and serosal lesions were resected for further histologic analysis. Larger polyps were also removed singly together with their pedicles. A small mesenteric nodule not seen previously was excised together with two periaortic nodes.

Pathological Findings

The two segments of small intestine showed elevated, flat and oval nodules on the serosa similar to that from which a biopsy was taken during the first operation. Other serosal nodules were small, round and firm and located close to the mesentery. In each segment, just opposite the serosal nodule an intraluminal polyp was noted rising above the mucosa, 3 to 4 cm in its greatest diameter, with a very broad base and a coarsely lobulated surface.

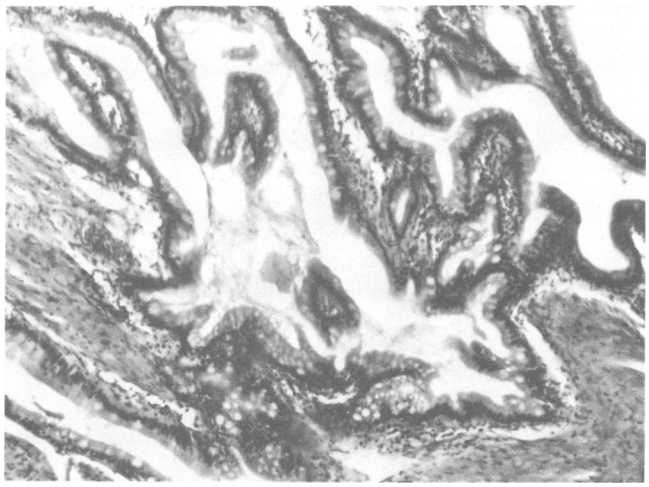

Figure 1.—A photomicrograph of a serosal nodule showing the columnar cell lining with numerous mucus cells and Paneth's cells sitting on the serosa. Note the absence of tumor fragments and signet ring cells in the mucin. (Reduced from magnification ×400.) (Klaus Lewis, MD, Department of Pathology, UCLA, reviewed the histopathology slides from the specimens of intestine and cervix.)

The other polyps submitted singly were round to oval with an average diameter of 3 cm. These polyps had a slender pedicle, the longest of which was 2 cm in length. Microscopically, the polyps were characterized by arborization of the tunica muscularis and covered by mucosa composed of columnar absorptive cells, well-differentiated glands containing Paneth's cells and mucus cells. The underlying muscularis mucosa and muscular layer were penetrated by dilated glands up to the serosa. This serosal lesion, which was mistaken for carcinoma implants on the first operation, showed similar mucosal cells and glands but oriented towards the peritoneal cavity (Figure 1). In addition, greatly dilated glands containing mucus were seen together with focal areas of calcification and ossification in the muscular layer, serosa and pedicles of the polyps.

The uterus and cervix were symmetrically enlarged and the entire specimen measured 14 by 9 by 7 cm. The cervix and lower half of the body were firm and grayish white, which on microscopic sections showed an extremely well-differentiated mucinous adenocarcinoma. The glands were lined by a single layer of endocervical-type epithelium with minimal atypia, making it difficult to distinguish from normal endocervical glands. However, some abnormalities in the shape, size and number of these glands, together with their deep penetration into the cervix and myometrium, made their malignancy obvious. The ovaries and tubes showed no abnormalities. The 2-cm mesenteric nodule showed metastatic adenocarcinoma. None of the periaortic nodes showed malignancy.

Discussion

This patient presented with the classical manifestation of cutaneous and oral pigmentation with multiple hamartomatous polyps in the intestinal tract. In addition, a rare, well-differentiated mucinous adenocarcinoma of the cervix was found. "Adenoma malignum" describes this highly differentiated tumor due to its deceptively innocent histologic appearance but with a highly aggressive character.[5,6] Of six patients reported to have this condition, only two are alive after five

TABLE 1.—*Peutz-Jeghers Syndrome and Additional Pathologic Lesions*

Affected Organs	*Pathologic Lesion*	*Reference*
Uterus	Adenoma malignum, or well-differentiated mucinous adenocarcinoma of the endocervix	McKelvey and Goodlin, 1963[5] McGowan et al, 1980[6]
Ovary	Sex cord tumor with annular tubules (SCTAT)	Clement et al, 1979[8] Costa, 1977[4]
	Sex cord stromal tumors with sexual precocity	Young et al, 1983[10]
Intestines	Enteritis cystica profunda	Kyriakos and Condon, 1978[7]

years of observation.[6] This tumor not only metastasizes early but is unresponsive to conventional treatment. Our patient was found to have a metastatic omental nodule just four months following completion of radiation treatment.

Another rare lesion was found in the small intestine in this patient in close association with the polyps. This is called enteritis cystica profunda[7] and is characterized by glands that penetrate deeply through the wall even up to the serosa, as seen in this case. This serosal lesion presented a dilemma then as to whether it represented a malignant invasion from the polyp as previously described[8,9] or a metastatic implant from the adenocarcinoma of the cervix. However, the irregular distribution of the glands and cysts with normal-appearing glandular epithelium containing mucus and Paneth's cells are features suggestive of its benign nature. Furthermore, the characteristic features of mucinous adenocarcinoma, namely, tumor fragments and signet ring cells in the tissue, are absent. While the pathogenetic mechanism of this lesion is uncertain, we share the opinion of others that these penetrating glands are hamartomatous growths in the reverse direction towards the serosa, in addition to their usual growth towards the lumen to form a polyp.

Recently, two unusual ovarian tumors are reported to belong to this syndrome,[10] which are distinctive from the various ovarian tumors previously reported.[3,4] The earlier tumors exhibit both simple and complex ring-shaped tubules, earning the name sex cord tumor with annular tubules.[3,4] These distinctive tumors, however, have a more varied histologic pattern and are associated with sexual precocity.[10]

Thus, this syndrome appears to have expanded lately to include various significant lesions in different combinations. Patients with this condition, therefore, should be assessed carefully in the light of our knowledge of the various associated pathologic features (Table 1). Our patient presented with two of these rare lesions consisting of enteritis cystica profunda and well-differentiated adenocarcinoma of the cervix, which had never been described before in one person.

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