

4. LINNÉR, B.: Society and sex in Sweden, The Swedish Institute, 1965.
5. Sweden. Royal Board of Education: Handbook on sex instruction in Swedish schools, Board of Education series, No. 28, Stockholm, 1956.
6. STRAIN, F. B.: Being born, Appleton-Century-Crofts, Inc., New York, 1954.
7. BECK, L. F.: Human growth, Harcourt, Brace & Co., New York, 1949.
8. DUVAL, E. M.: Facts of life and love for teen-agers, 2nd ed., Association Press, New York, 1956.
9. The Child Study Association of America: What to tell your children about sex, edited by A. Suchsdorf, Perma-books, Montreal, 1959.
10. (a) LERRIGO, M. O. AND SOUTHARD, H.: Parent's privilege: how, when and what to tell your child about sex, E. P. Dutton & Company Inc., New York, 1956.
- (b) *Idem*: A story about you: the facts you want to know about sex. E. P. Dutton & Company Inc., New York, 1956.
- (c) *Idem*: What's happening to me? Sex education for the teen-ager. E. P. Dutton & Company Inc., New York, 1956.
- (d) *Idem*: Learning about love: sound facts and healthy attitudes toward sex and marriage, E. P. Dutton & Company Inc., New York, 1956.
- (e) *Idem*: Sex facts and attitudes, E. P. Dutton & Company Inc., New York, 1956.
11. LERRIGO, M. O. AND CASSIDY, M. A.: A doctor talks to 9- to 12-year olds, Budlong Press Co., Chicago, Ill., 1964.
12. LEVINSOHN, F. AND KELLY, G. L.: What teenagers want to know, Budlong Press Co., Chicago, Ill., 1962.
13. KIRKENDALL, L. A. AND OGG, E.: Sex and our society, Public Affairs Pamphlet No. 366, Public Affairs Committee, Inc., New York, 1964.
14. United States. National Education Association. Publications Division: What parents should know about sex education in the schools, Washington, D.C.
15. KIRKENDALL, L. A.: Sex education. SIECUS discussion guide No. 1. Sex Information and Education Council of the United States, Inc., New York, October 1965.
16. SEMMENS, J. P. AND CEFALO, R. C.: Sex education is a professional responsibility, American College of Obstetricians and Gynecologists, Committee on Maternal Health, Eaton Laboratories, Norwich, N.Y.
17. FLETCHER, J.: Morals and medicine, Princeton University Press, Princeton, N.J., 1954.

CASE REPORTS

Primary Volvulus of the Appendix

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ALTHOUGH acute appendicitis is very common, its etiology remains obscure. Precipitating factors range from simple obstruction to infection or parasitic infection.

During a one-year period we have encountered two cases of primary volvulus of the appendix, one of which was complicated by infection of the wound with gas gangrene.

A cursory search of the literature revealed only five previous reports of volvulus, a rare precipitating cause of acute appendicitis.^{1, 3-5} Two of these^{1, 4} involved a mucocele of the appendix and in one² the appendix was infested with *Schistosoma haematobium*. In the latter the weighted tip of the infested appendix contributed to the development of the volvulus, but in our cases the volvulus appeared to be primary.

CASE 1.—A 21-year-old white man was admitted to hospital with abdominal pain that had begun suddenly about 36 hours before admission. This pain was located in the central abdomen at first but shifted to the right lower quadrant in 24 hours. Nausea and vomiting began about two hours after the inception of pain.

On examination, the five cardinal signs of acute appendicitis were present: tenderness in the right lower quadrant, guarding in this area, rebound tenderness, a positive Rovsing's sign, and rectal tenderness on the right side.

His temperature was 103° F., pulse rate 104/min., and blood pressure 124/60 mm. Hg. The white blood count was elevated to 16,200/c.mm. The remainder of the hemogram and the urinalysis were negative.

The abdomen was opened through a transverse, skin-crease, muscle-splitting incision in the right lower quadrant, and an acute gangrenous appendix was found in the subcecal position. The cause of the gangrene was a volvulus of the appendix through 450° in a counter-clockwise direction. The terminal one-third of the appendix, distal to the volvulus, was black and gangrenous. The middle portion, involved in the torsion, was edematous and acutely inflamed. The appendix proximal to the point of torsion appeared normal. Appendectomy was completed uneventfully, with inversion of the stump by a purse-string suture.

Postoperatively the patient was comfortable and his temperature fell to 100.8° F. However, on the second postoperative day, his temperature "spiked" to 103.2° F. On administration of acetylsalicylic acid, his fever decreased to 100.4° F. However, he complained of severe tenderness in the area of the incision. Examination revealed marked tenderness with crepitus about the incision. The surrounding skin was edematous and reddened.

The patient was isolated immediately and the sutures were removed, with the release of a watery grey discharge with the typical odour of gas gangrene. After samples were taken for culture, the wound was irrigated with 5% hydrogen peroxide and this was repeated every four hours. Definitive therapy consisted of parenteral administration of tetracycline, 2 g. twice daily, and tetanus toxoid, 1 c.c. Following appropriate skin sensitivity tests, he was given 15,000 units of antitetanus serum intramuscularly and an intravenous infusion of glucose in distilled water containing five million units

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TABLE I.—GAS GANGRENE ANTISERUM

Antitoxin	Lederle	Parke-Davis	Connaught
<i>Cl. welchii</i>	10,000 u.	10,000 u.	10,000 u.
<i>Cl. septicum</i>	10,000 u.	10,000 u.	5000 u.
<i>Cl. novyi</i>	1500 u.	1500 u.	10,000 u.
<i>Cl. oedematoides</i>	1500 u.	—	—
<i>Cl. histolyticum</i>	3000 u.	—	—

of penicillin G and three vials of gas gangrene antitoxin per litre (Table I).

The first litre of infusion was delivered in three hours, followed by a slower drip of 4 l./24 hours.

The following morning his temperature was 99.4° F. and the intravenous infusion was discontinued. Tetracycline was continued orally in doses of 500 mg. four times a day. Hydrogen peroxide irrigations of the wound were continued. Crepitus and tenderness disappeared from the wound within the first 28 hours of treatment. The patient continued to improve and was discharged on the ninth postoperative day. Discharge from the wound cultured specifically for anaerobes produced nothing but coliform organisms. From the clinical findings and the course of the illness, this patient probably suffered from a clostridial cellulitis.

The importance of early recognition and treatment of gas gangrene, an uncommon yet dangerous complication of any form of bowel surgery, should be emphasized. A delay in treatment while waiting for laboratory confirmation in the form of anaerobic culture is unnecessary and dangerous when the diagnosis is reasonably certain on clinical grounds.

CASE 2.—A 12-year-old boy was admitted to hospital with crampy central abdominal pain of 24

hours' duration that had gradually localized in the right lower quadrant before admission. He had some associated nausea but no vomiting.

On examination, the blood pressure was 110/70 mm. Hg, the pulse 120/min. and the temperature 99.8° F. There was severe right lower quadrant tenderness with rebound tenderness and guarding. Rovsing's sign was positive and the psoas test was negative. Bowel sounds were reduced. Rectal examination revealed marked tenderness on the right side.

His hemoglobin was 12.2 g. %, and his leukocyte count 14,500/c.mm., predominantly neutrophils. Urinalysis revealed 1+ albumin, a trace of sugar and 4+ acetone.

At operation two hours later, an acute gangrenous appendix was removed and the stump was inverted with a purse-string suture. The appendix was 7 cm. long and 1 cm. in diameter and the distal one-third of the organ was grossly dilated. It had rotated on its base in a clockwise direction through 360°, and the wall distal to the volvulus was completely gangrenous.

The patient's subsequent course was uneventful and he was discharged on the fourth postoperative day.

SUMMARY

Volvulus of the appendix is a rare cause of the signs and symptoms of acute appendicitis. Two cases occurring within a one-year period are described; one of these was complicated by a gas gangrene wound infection.

REFERENCES

1. DICKSON, D. R. AND JENNINGS, W. K.: *California Med.*, 79: 317, 1953.
2. HUGHES, M.: *Brit. J. Surg.*, 36: 428, 1949.
3. MANZELLA, M.: *Bol. Soc. Argent. Ciruj.*, 6: 757, 1945.
4. LENTINO, A. S.: *Sem. Med. (B.Air.)*, 1: 254, 1946.
5. HEATLEY, T. F.: *J. A. M. A.*, 112: 1935, 1939.

PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

DR. BOWMAN REPORTS

During the past few months a large number of cases of severe ulcerative conditions of the throat and mouth have occurred among the Canadian troops in England and the British troops in France. The infection is communicable and is due, apparently, to Vincent's organism, the spirochætae and fusiform bacilli being present in large numbers. Amœbæ, streptococci, etc., have been found also, but it is only with the disappearance of Vincent's organisms that the condition undergoes cure and this fact may be taken as adequate proof that these organisms are an essential factor in the causation of the disease. When the gums are attacked the condition is more acute than ordinary pyorrhœa and the state of the mouth in advanced cases strongly suggests scurvy. There is more or less glandular enlargement, the submaxillary and sublingual glands being most frequently affected. The throat condition resembles that seen in syphilis and in some cases cannot be diagnosed clinically from that disease; therefore a Wassermann reaction should be done in all suspicious cases before a definite diagnosis is made or treatment begun. The therapeutic test is valueless as one full dose of salvarsan will usually clear up a badly ulcerated throat due to Vincent's organism. In the series reported by Captain Bowman the temperature varied between normal and 102° F., never rising in any instance to 105° or 108° F. as described by Chalmers and Wilson. Severe depression is a constant and marked symptom of the condition, constitutional disturbance

is present, and the breath is extremely foetid. The gums bleed easily, are injected, retracted from teeth, and spongy in appearance. Sometimes the condition becomes chronic and may persist for months.

Treatment.—Emetine has been found to be of no value in the more widespread forms of the disease. Salvarsan has marked effect upon the condition but its use among troops is prohibited both on account of its cost and the instability of its solutions. The use of the following prescription has been found to be effective and the throat, even when deeply ulcerated, may be healed in a short time with a solution of wine of ipecac, 1 oz.; glycerin, 1 dram; Fowler's solution, 3 drams; to be used as a mouthwash.

The infection of the gums is very persistent but may be ameliorated and usually cured by the same solution. The pus should be wiped away and the solution carefully applied to the gums and pockets around the teeth. A small applicator should be used. All patients are instructed to drop ten or fifteen drops of the mixture on to a toothbrush twice a day and to brush the teeth and gums vigorously. A paste containing both Fowler's solution and ipecacuanha wine, in small tins is now issued from the dispensary of Moore Barracks Hospital to be used in combination with the solution. Both paste and solution are marked "Poison" and the patient is instructed to swallow as little as possible of the solution while washing the teeth.—Bowman, F. B.: *In: Proc. Roy. Soc. Med.*, 9: 51, 1916, *Canad. Med. Ass. J.*, 6: 933, 1916.