Children who understand the spoken work and gesticulate in response to it probably have either "expressive aphasia" or "articulatory apraxia" (Morley *et al.*, 1954), and those who respond in the same way only to signs have "receptive aphasia." Excessive gesticulation was found in 16 children, most of whom had the "expressive" disorder. The presence of gesticulation and of babbling is helpful in assessing intelligence (Illingworth, 1955). Over-attentive siblings and parents help to perpetuate gesticulation and remove the stimulus for speech development.

Schantz-Hansen (1952) has suggested that treatment can profitably be started between 3 and 4 years of age, and we subscribe to this view. By attendance at a nursery school or speech or child guidance clinic, or by simply advising parents, 60% of these children can start school without an impediment. Still further psychological disturbance, such as described by Morley *et al.* (1950) and Ingram and Reid (1956), may thereby be avoided. Morley *et al.* (1955) suggest that the more severe and less responsive cases are due to "delayed neurological development"—a highly selective deficiency. As such cases are not always easy to recognize we believe that all these children should be given treatment in the first instance. If unresponsive, they should be watched so that therapy is given when neurological development is sufficient for benefit to be derived from it.

Conclusions and Summary

The purpose of the present study was to assess the very early development of children with so-called delayed speech and subsequent dyslalia in an attempt to discover possible causes and, in addition, to establish some indications for treatment. These children constitute about 8% of the work of the hospital speech clinic.

The larger proportion (80%) suffer, in fact, from arrested development, probably the result of non-specific psychological factors operating between the age of 1 and 2 years.

In about one-third of all the cases there is a history of other members of the family having similar speech anomalies. This, along with the unequal sex incidence, suggests that a genetically determined factor may also be operative. It may, however, be due to familial living characteristics being copied from one generation to another. Crossed laterality plays little or no part in the production of symptoms.

The specific speech anomalies have been described.

All cases should be given the benefit of a trial period of treatment. In this way many children will start school without handicap. Treatment should not be forced and should at first be on general lines. Attendance at a nursery school may be all that is required in the mild cases. A few of the severe cases, which may be due to delayed specific neurological development, may not respond. These should be reviewed regularly over the period of spontaneous speech development, and treatment for the inevitable sequelae should be given when they can derive benefit from it. Advice to parents and schoolteachers concerning their management is very important.

We wish to thank the Research Committee and the physicians and surgeons of the Hospital for Sick Children, Great Ormond Street, London, for giving their consent to this work and granting access to the case records of these children; to Professor A. A. Moncrieff for his kindly interest and advice; to the department of psychological medicine for the intelligence testing; to the Research Committee for providing funds for patients' travelling expenses, and for the secretarial work kindly performed by Miss Stringer and Miss Lépine. We also thank the schoolteachers and speech therapists who responded to our request for progress reports.

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TREATMENT OF ACUTE APPENDICITIS

BY

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Since the days when appendicectomy became a relatively safe procedure it has been fairly generally taught that the correct treatment of all cases of appendicitis is appendicectomy, and I am told that this is still the current teaching. Nevertheless, for over fifty years surgeons from various parts of the world have written from time to time advocating conservative treatment in some of the more advanced cases.

Twenty-five years ago I began to treat cases of appendix abscess conservatively, and was surprised that most of them resolved without any operative help. Since the introduction of antibiotics I have continued this line of treatment and have usually found that it is not necessary to operate, for most cases settle down.

If with the help of antibiotics the human body could absorb an appendix abscess, I began to wonder whether it was capable of dealing with burst appendices that did not localize. Experiment soon showed that it could.

During the last four years I have asked that every case of acute appendicitis of over 24 hours' duration coming into hospital under me should be treated conservatively. During this period I have had three registrars for periods of about a year who have nobly supported me, and, although doubters at first, have become converted. But I have had, for short periods on two occasions, temporary registrars who did not always fall into line. The results of this policy are the reason for the present communication.

Extending this policy still further, I have conservatively treated a number of cases of acute appendicitis received within 24 hours, and am satisfied that the condition can be safely and certainly dealt with in this manner.

Treatment

The treatment given is rest in bed in any position the patient finds comfortable, nothing of any description by mouth except water, which is given freely, six-hourly injections of penicillin, 250,000 units, and streptomycin, 0.5 g. in severe cases, chloramphenicol, chlortetracycline, tetracycline, or sulphadimidine may be given as well. Pain is relieved by pethidine and/or morphine, but we have found

that little is needed after the first 24 hours. If vomiting is at all marked, gastric suction through a Ryle tube is instituted, an intravenous drip is set up, and total fluid intake and output are carefully balanced daily.

When the pain and sickness have subsided and the temperature and pulse have fallen, glucose, milk, and other fluids are given by mouth, and there is a gradual return to normal diet, varying in time according to the severity of the attack. No purgatives or enemas are given. Liquid paraffin, ½ oz. (14 ml.) night and morning, is given by mouth. As the condition subsides, a glycerin suppository is used if necessary.

In cases of appendix abscess the same treatment is given and usually resolution occurs. If this does not happen, a waiting policy should be adopted until the abscess either comes up to the abdominal wall or can be felt as a bulge in the pelvis. In the former case, when the percussion note is dull, under general anaesthesia a wide-bore needle is passed through the abdominal wall until pus can be aspirated. A stab incision is made with scalpel along the needle, a large artery forceps is used to enlarge the stab, the pus is evacuated, and a small drainage tube inserted. I think it is a mistake to do a formal gridiron operation and open up the muscle and fascial planes. In the latter cases, under general anaesthesia, the patient is placed in a lithotomy position, the sphincter ani is dilated, and the abscess is opened with sharp-pointed sinus forceps at the point of fluctuation. No drainage is necessary. Cases of burst appendices with localized, spreading, or general peritonitis, even with distended abdomens and paralytic ileus, were treated conservatively and settled down.

During the course of treatment of advanced appendicitis by conservative means it is not unusual to find distension of the abdomen with dilated loops of small intestine on a straight *x*-ray film. It is nearly always of a paralytic nature and settles with treatment. But it is important to realize that mechanical obstruction with colicky pains and peristaltic waves can develop during an attack of acute appendicitis, and that this necessitates operation. We had one such case under our observation—that of a woman who had late appendicitis which was treated conservatively, and who developed mechanical obstruction. At operation, a loop of ileum was found hitched on to an acutely inflamed appendix, causing kinking and obstruction. The adhesions were separated, the appen ix was removed, and all went well.

Case 1

A mongol idiot aged 7, of poor physique and low mentality, was admitted to hospital with acute appendicitis and peritonitis. There was a history of abdominal pain and vomiting for three days. On admission he was gravely ill and slightly cyanotic; temperature 102° F. (38.9° C.), pulse rate 150 and almost impalpable. The abdomen was distended, generally rigid, and tender, especially in the right lower quadrant. Straight *x*-ray films of the abdomen and chest were normal. The white blood cells numbered 22,000.

Continuous gastric suction was instituted, water only was given by mouth, and a continuous intravenous drip was set up with "polythene" tubing. Continuous individual nursing care was necessary to stop him pulling the tubes out. His fluid balance was kept right by a carefully maintained intake and output chart.

During the first week he was treated with penicillin, streptomycin, and tetracycline, and during the second week with penicillin and sulphadimidine. For four days he was gravely ill, and it was the general opinion that his chances of survival were not good. But after this he made an astonishingly rapid recovery and was discharged from hospital 17 days after admission, free from all abnormal signs and symptoms.

Comment.—I have chosen this case to disprove the theory that the peritoneum in children cannot stand up to infection as well as in adults, which I do not believe, and to demonstrate the efficiency of treatment in an extremely severe case under the most difficult circumstances.

Case 2

A girl aged 15 was admitted to hospital with acute appendicitis and pelvic peritonitis. There was a history of five days' abdominal pain and vomiting. On admission the temperature was 102° F. (38.9° C.) and the pulse rate 140. The lower abdomen was tender and rigid, particularly in the right iliac fossa, where a diffuse hard swelling could be felt. The pelvic peritoneum was very tender on rectal examination, straight *x*-ray films of the chest and abdomen showed nothing abnormal, the W.B.C. was 12,000, and the urine was normal.

Conservative treatment was instituted, and for 14 days antibiotics were administered. Her temperature fluctuated during this time between 103° F. (39.4° C.) and normal, and her pulse rate between 140 and 100. After the first three days she had little pain and no vomiting, and she said she felt reasonably comfortable.

At the end of 14 days a fluctuating swelling could be felt in the anterior rectal wall. This was opened under general anaesthesia without any difficulty, and rather more than half a pint (280 ml.) of offensive pus evacuated. No drainage tube was inserted. Her temperature and pulse rate soon fell to normal and all abnormal physical signs gradually disappeared.

She was discharged from hospital 16 days after the operation free from all abnormal signs and symptoms.

Comment.—This case shows how a severe appendix abscess which does not resolve with conservative treatment can be brought to a successful termination by simple means, without removing the appendix during the acute stage.

Case 3

A boy aged 9 (the son of an experienced nurse) was admitted to hospital with acute appendicitis. There was a history of abdominal pain and vomiting for four days. On admission his temperature was 101.5° F. (38.6° C.) and his pulse rate 120. The abdomen was rigid and tender in the right iliac fossa.

Conservative treatment was adopted and nothing was given by mouth except water. Injections of penicillin and streptomycin were given six-hourly for seven days. In 24 hours his pain and vomiting had gone. In three days his temperature and pulse rate fell to normal and stayed there. In 12 days he was sent home free from all abnormal signs and symptoms.

Four months later he was readmitted to hospital for an interval appendicectomy. The operation was easy; there were no adhesions to the abdominal wall, but some adhesions between the caecum, ileum, and appendix were present. He made an uninterrupted recovery, his temperature and pulse rate remaining normal throughout.

Comment.—This is a typical case of acute appendicitis, received late, treated conservatively, and brought to a successful conclusion by an interval appendicectomy.

Results

In the years 1953, 1954, and 1955, in my general surgical clinic at the Rotherham Hospital, 609 appendicectomies were performed by myself or, in my absence, by my deputy, my registrar, or my house surgeon. Of these, 395 were cases of acute appendicitis; 100 were cases of chronic recurrent appendicitis or were interval appendicectomies; 23 were cases in which no pathological lesion was found; and 91 were done *en passant* in cases of gall-stones, duodenal ulcer, ovarian cyst, carcinoma of the colon, etc. Five cases of appendix abscess were drained, and 137 cases of acute appendicitis of more than 24 hours' duration were treated conservatively.

During these three years we have had two deaths from appendicitis.

The first was that of a man aged 78 who was admitted with advanced appendicitis and peritonitis, which settled down with conservative treatment. His temperature and

pulse rate became normal, his pain and vomiting stopped, and his tenderness, rigidity, and distension went. On the 17th day, however, he began to get "chesty" and rapidly deteriorated, and on the 19th day he died from bronchopneumonia. He was a frail, feeble old man, and I very much doubt whether his chances of survival would have been greater if we had operated on him on admission.

The second fatal case was that of a man aged 58, who was operated on eight weeks previously in another hospital for gangrenous appendicitis, followed by a second operation for a pelvic abscess. He became depressed and, very foolishly, went home against medical advice. He deteriorated at home, with diarrhoea, malaise, sweating, abdominal pain, etc., and when I saw him he was gravely ill. He refused to go back to the hospital where his appendix had been removed, and only under great pressure did he agree to come into the Rotherham Hospital. In spite of treatment he died a few days later. It is an interesting speculation whether he might have survived if he had been treated conservatively from the start.

Among the 609 appendicectomies performed, 395 were for early acute appendicitis with no deaths; and 137 cases of late appendicitis were treated conservatively with one death. One patient died whose appendix had been removed elsewhere in the late stage.

Points for Consideration

The treatment of late acute appendicitis by conservative measures is, in our experience, a sound procedure and is justified by the results. But there are also other matters that must be considered.

When cases of severe appendicitis are operated on in the acute stage, suppuration in the abdominal wall may complicate matters. This may settle down and healing take place, but a weak spot may well be left. This may cause slight inconvenience at the time, but as the patient ages and the muscles weaken, and particularly if large deposits of fat appear in the abdomen and abdominal wall, ventral hernias may develop later. During the three years under review six cases of ventral hernia following appendicectomy were treated by operation. One of these was irreducible; one was obstructed; one was done more than 40 years after the appendicectomy; and one was performed through a gridiron incision. Adhesions, too, may form between the omentum and the small bowel and the abdominal wall. These usually cause little trouble, but they can jeopardize the patient's life even many years later. During the three years we have had three cases of acute intestinal obstruction, requiring operation, caused by such adhesions.

Adhesions may also form between loops of bowel and cause trouble. During this year we lost a youth who had had an appendicectomy in 1944, done at a late stage, complicated by suppuration in the abdominal wall, and followed by a weak scar. He had a massive volvulus involving the greater part of the small intestine. It is possible that the story might have been different if he had been treated conservatively in 1944.

It is, of course, correct to argue that adhesions may follow conservative treatment, and may cause trouble subsequently. We have had many opportunities of testing this matter when doing interval appendicectomies. No doubt some adhesions are found, but we have usually been surprised to see how beautifully nature has cleared things up, and how few are the adhesions present. Often after a really severe appendicitis, or after quite a large appendix abscess, all that is found is a wizened appendix.

We have usually found these interval appendicectomies easy operations, and often there are no adhesions to the abdominal wall. The secret is to wait for at least three months before doing the interval operation.

The argument is sometimes put forward that conservative treatment of severe appendicitis in the female may lead to sterility. It is true that sterility may follow pelvic suppuration, but it is my belief that fewer adhesions form after conservative treatment than after operative treatment, particularly if a drainage tube is inserted. One of my cases of pelvic abscess due to appendicitis, treated conservatively in the early stage, then by rectal incision followed by interval appendicectomy, later had a successful pregnancy.

Appendix abscesses should not be drained during the early acute stage. The case of appendicitis that gave us most trouble during the three years was such a case. A young man with an appendix abscess was operated on through the peritoneal cavity, and drained, by one of my temporary registrars. He developed a faecal fistula that later became a discharging sinus, which had to be excised. We had trouble with this patient for many months.

From time to time circumstances arise that make an operation for acute appendicitis undesirable. Medical examples that we had were appendicitis with measles, appendicitis in pregnancy, appendicitis in an old man with severe bronchitis, appendicitis in a woman with auricular fibrillation and heart failure, and appendicitis with influenza. Another example is that of a case on board ship at sea. I recently removed a wizened appendix from a ship's engineer who had had acute appendicitis in mid-ocean and who was fortunate enough to have a ship's surgeon who treated him conservatively.

One cannot help feeling that all cases of acute appendicitis occuring away from skilled surgery and adequate surgical surroundings are best treated conservatively. The unskilled surgeon will be saved a lot of anxiety and the patient have a better chance of survival.

Confidence in the excellence of conservative treatment permits the more frequent use of that most valuable process, observation. Observation prevents many errors in diagnosis and unnecessary operations. We have had two cases sent in as appendicitis that after two or three days' observation turned out to be infective hepatitis. At a meeting of a local medical society some years ago, during a discussion on influenza, a well-known surgeon said he had just removed a normal appendix from a case of influenza. Observation would have saved a lot of trouble. Two years ago I removed a stone from the right ureter of a young man who had had his appendix removed elsewhere a month previously. All doctors and surgeons could quote similar examples.

The point I wish to make is that if there is any possible doubt of the diagnosis it is safer and wiser to observe and treat conservatively, and allow time for investigation. A year ago a young girl was admitted to hospital as a case of appendicitis, and presented some of the symptoms and signs, but operation was postponed. After observation for a period, she was found at operation to have regional ileitis, and an enterectomy was performed. We all felt afterwards that it was wiser and safer that the operation was done "on a list" rather than as an emergency at night.

Emergency operations, done under difficulties, perhaps in the middle of the night, perhaps by relatively inexperienced surgeons, with inadequate assistance, without a consultant anaesthetist, with a scratch theatre staff, and perhaps during a period of overwork and fatigue, may lead to errors that observation and conservative treatment would prevent.

Comments

All cases of acute appendicitis, or of doubtful acute appendicitis, should be admitted to a hospital or nursing home at once, if possible, in order that they may have constant skilled surgical and nursing attention.

In cases of doubt it is not wise to observe the case in a private house, and in cases where a firm diagnosis has been made it is not safe to adopt conservative treatment at home. Nobody can say at the beginning of an attack how severe it is going to be, and the treatment of an advanced case may require calm courage and firm nerves in addition to skilled surgical and nursing technique.

We are still getting many cases of acute appendicitis too late. During my three years, 395 cases of acute appendicitis were under 24 hours old when admitted, but 137 cases were more than 24 hours old when admitted.

A great deal of trouble and anxiety, not only to the patient, relatives, and doctor, but also the hospital staff, could be saved if we can get a higher proportion earlier.

Summary and Conclusions

An account is given of a series of cases of acute appendicitis treated conservatively with some illustrative cases.

During the course of over 30 years of surgery, a good deal of which has been emergency surgery, I have gradually been tending more and more to conservative treatment in cases of advanced appendicitis.

For many years I have believed it best to treat appendix abscesses conservatively. For more than four years I have believed it best to treat all cases of acute appendicitis over 24 hours old conservatively.

It is probably wise to treat all cases of acute appendicitis under 24 hours old by an emergency appendicectomy, and this is our usual custom.

One sometimes wonders whether it would not be a sound procedure to treat all cases of acute appendicitis conservatively. They seem to settle down quite nicely, and some never seem to have any further trouble: the appendix has wizened.

We should then be left with appendicectomy for recurrent acute appendicitis, and for chronic appendicitis—the "grumblers" with faecaliths in the appendix, with kinks, and with adhesions.

Looking into the future, one cannot help feeling that our successors will be more conservative in their outlook in this matter, and may look back on us as having been too "appendicectomy-minded."

I acknowledge the assistance of my three registrars, Mr. K. Drummond, Mr. R. Kotariya, and Mr. R. Mansharamani, without whose help, skill, and co-operation this work would not have been possible.

EXFOLIATIVE CYTOLOGY IN THE DIAGNOSIS OF LUNG CANCER

EXAMINATION OF ONE LABORATORY'S RESULTS

BY

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Although much of the early work on the recognition of cells exfoliated from tumours was done in this country, little use is made here to-day of the techniques of exfoliative cytology in the diagnosis of cancer, though there have been signs recently of a renewed interest in the subject (Osborn, 1953; Philps, 1954).

After I had spent several months in Dr. Papanicolaou's department a service in cytology was offered in this laboratory for some four and a half years. The majority of requests have been for the examination of sputum. A review of the results obtained might be of some value in assessing whether exfoliative cytology has any contribution to make towards the diagnosis of lung cancer.

Material and Method

Specimens of sputum have been sent to the laboratory from a wide area, most of them coming from chest clinics and chest hospitals. In 1955, for example, 567 specimens out of a total of 855 arrived from such sources. The remainder were from general hospitals and general practitioners.

All specimens, whether sent to the laboratory by post or not, had been collected by getting the patient to cough directly into a jar containing 70% alcohol. This routine, which is necessary only for specimens that cannot be examined at once, has proved very satisfactory in practice. Any possible slight loss in quality has been preferred to the risk of specimens being spoilt altogether by delay in sending or examining material not so treated.

It is not intended to describe the laboratory procedures that have been followed. No new methods have been developed, and the techniques and the reporting of results have followed closely those described by Papanicolaou (1954). Specimens have been placed into one of five classes: (1) absence of atypical or abnormal cells; (2) atypical cytology but no evidence of malignancy; (3) cytology suggestive of, but not conclusive for, malignancy; (4) cytology strongly suggestive of malignancy; and (5) cytology conclusive for malignancy. For the purpose of this report, specimens which had been reported originally as class 3 have been called "suspicious" and those which had been placed in class 4 or 5 have been called "positive."

Results

Table I shows the outline of the results obtained for the years 1952–5. For the years 1952, 1953, and 1954 the number of specimens examined, the number of patients from whom they came, and the number and percentage of patients diagnosed cytologically as suspicious and positive are given.

TABLE I

Year	Total Specimens	Total Patients	Suspicious or Positive	
			No.	%
1952	200	107	10	9·4
1953	444	232	27	11·6
1954	743	329	44	13·4
1955	855	351	42	11·9

For the year 1955 a more detailed analysis is possible. A request for information was sent to the doctors concerned in respect of the 42 patients diagnosed as suspicious or positive and full information was obtained about 40 of them. The smears from 23 of these 40 patients were reported as positive and from 17 as suspicious (Table II).

TABLE II

	Final Diagnosis of Cancer	Final Diagnosis Not Cancer	Histological Evidence of Cancer	Cancer Cases with Positive Smears and Negative Biopsies
Positive group (23 cases)	23	0	11	2
Suspicious group (17 cases) ..	12	4 and ?1	5	2

During 1955 all cases from which positive smears were obtained were finally diagnosed as cancer. Histological confirmation in all cases was not available. Several patients were too ill for further investigations and bronchoscopy was refused in one case. The final diagnosis of cancer was taken from the opinion expressed by the doctor concerned in his answers to the questionary. In some cases, therefore, the final diagnosis of cancer rests on clinical findings, plus radiology, smears, and histology; in others, one or more of these pieces of evidence will be lacking, but in no case was the doctor in any doubt about the diagnosis. In the suspicious group it is seen that four