18, 1935, when in perfect health, he was involved in a motor accident, sustaining cerebral concussion, fractured right fibula, lacerated wounds of the forehead and left orbital regions, and bruising of the facial tissues, hands, and left knee. He was admitted to Hove Hospital, where he was unconscious for twenty-four hours. Three attempts to control the fragments of the fibula were made, and finally a bone peg was inserted and he was discharged with the leg in plaster.

On October 4, 1935, he developed acute nocturnal dyspnoea, expiratory in type, of great severity. On examination the lungs were full of expiratory sounds. There was a forked scar over the side of the bridge of the nose, the two limbs running up the forehead and over the right eyebrow. The nose internally showed obstruction of the left naris. Adrenaline relieved the attack, but though further treatment with a nasal spray of ephedrine and chlorotone, and the usual drugs internally, kept the more violent paroxysms under control, the patient was in constant discomfort. With the former case in mind, he was referred to Mr. Harold Downer, who reported: "The nasal septum is markedly deflected to the left, and there is opacity of the left antrum."

Submucous resection was performed on November 25, 1935, by Mr. Downer. By November 27 the asthma was much improved, and since January, 1936, has not recurred.

Comments

It is submitted that nasal injury resulting in deformity was the precipitating factor in the development of asthma in these patients, who had never previously shown any asthmatic tendency, and have shown none in the considerable time which has elapsed since full recovery from operation. On the other hand, the great majority of cases of nasal injury have no sequel of this kind. A number of reasons may be suggested for the appearance of asthma in these two individuals. Doubtless unknown predisposing factors were present, as emphasized by Maxwell (1936). In addition, however, the above accidents produced severe trauma. The violence with which the girl struck the ground, and the man the wind-screen, was probably more than is involved in most nasal accidents. There was also an element of psychical trauma. Shock at the time, the possibility of police intervention, litigation in the civil courts, and anxiety regarding means of livelihood were added. Further—and it is suggested that this is most important—it happened that other and more urgent injuries than those to the nose were present, and owing to the pressure of the treatment of these the condition of the nose and the nasal passages could not be determined in the early stages and was not investigated before discharge from hospital. For these reasons deflection of the septum and scarring of the wound in the mucosa probably combined to produce a trigger area which, in patients whose nervous balance was disturbed, resulted in the sudden onset of acute asthmatic attacks. These appeared after intervals of six to eight weeks.

In fractures of the nose unaccompanied by other injury treatment is much more early given, and even if external reposition is not perfect, the nares are likely to be left patent and conditions for asthma production are prevented. When the injuries in these two cases had produced asthma, the presence of asthma was no contraindication to operative treatment. Delay in operation was followed by a poor immediate result and a lengthy interval before the disappearance of the attacks. Immediate operation was followed by rapid relief and disappearance.

The operation was that of simple resection, and it should be emphasized that no suggestion is made that nasal treatment for asthma of other origin should take this form. Nor is it regarded as clear why such operation

should relieve mechanical pressure, since the asthmagenic area of Dixon and Brodie does not appear to coincide with that concerned in submucous resection. However, though it is realized that two cases are quite insufficient for far-reaching conclusions, the following of some practical importance seem justifiable.

Conclusions

Nasal injury may be a precipitating factor in the production of asthma.

In cases of nasal injury accompanied by more severe injury elsewhere, the condition of the nose should be borne in mind, ascertained before discharge, preferably by specialist opinion, and remedied if in any way doubtful.

Once asthma is established, operation to remedy nasal deformity is indicated at the earliest possible moment.

The presence of asthma is no contraindication to operative treatment, and the results may be expected to be good in proportion to the promptitude of operation, provided that the history and the condition of the patient show no other cause for the development of the asthma.

I am much indebted to Mr. Harold Downer for his criticism and advice.

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MANAGEMENT OF A HAY-FEVER IONIZATION CLINIC

A COMPARATIVE STATISTICAL SURVEY OF RESULTS IN 1937 AND 1938

BY

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The Margaret Street Hay Fever Ionization Clinic, attached to the Margaret Street Hospital for Diseases of the Chest, was opened in the spring of 1937, and the results of the treatment for 1937 were reported in the *Journal of April 30, 1938* (p. 948). The figures for 1938 show a great improvement over those of 1937. This improvement may either be due to the general mildness of hay fever during the season of 1938 or be the effect of our modified technique. In the first place, in 1938 we to a large extent gave up prophylactic ionization, and most of the patients were treated either immediately before the expected onset of the hay fever or actually at the beginning of the attack. Secondly, last year we were using an ionization current of 6 to 8 milliamperes, whereas in 1937 the current was only 3 to 5 milliamperes. Subsequent experience will show whether the improved results of 1938 are really due to the modified technique.

Organization

The organization of the clinic has been further simplified, and can be briefly described as follows. The appointment book is arranged in such a way as to show at a glance the ionization sets (of which there are eighteen) still available at any particular time. The patient is received by an attendant, who takes his particulars and at the same time sprays the nose with a 2 per cent. solution of larocain. The patient is then ready for the nose-packing, which is carried out by medical assistants. The packing material consists of thin squares of cotton-wool reinforced by a single layer of gauze and soaked in a 1 per cent. solution of zinc sulphate. The cotton-wool

and gauze are specially prepared for the hospital on large reels one inch wide, and the strip is passed through the zinc sulphate solution and a small toy mangle, which rings out the surplus solution. As it comes out of the mangle the strip is cut in pieces about an inch long. In this way it is possible to prepare squares for 100 patients in about twenty minutes.

When the packing has been carried out the patient is directed to the ionization treatment room. There a number of patients sit along the walls, each being supplied with an ionization set connected to the electrical supply derived from a special battery. The ionization set consists of a small wooden box on which are mounted a sliding resistance, a milliamperemeter, and terminals for the input and output of the current. The electrical battery consists of about thirty Leclanché cells provided with heavy zinc plates that will last several years. Two nurses are in charge of the electrical treatment, each capable of looking after eight to ten patients. After the completion of the treatment, which takes fifteen minutes, the patient is directed again to a medical assistant, who unpacks the nose and fixes the date of the next treatment. With this arrangement it was possible to treat up to 100 patients in a morning (two and a half hours), with only three medical assistants, two reception attendants, and two nurses in charge of the electrical treatment.

Results of Treatment

During last summer 776 patients were treated for hay fever by the nasal ionization method. A questionnaire sent out to all the patients brought in 460 replies, of which only 432 were suitable for statistical purposes. The following table gives the comparative results of the treatment in 1937 and 1938.

	1937	1938
Patients free from hay fever during the season	9% 18%	
Greatly improved	35% 50%	
Slightly benefited	46% 25%	
Not benefited	8% 6%	
Made worse	2% 1%	

Nasal ionization for hay fever has thus proved valuable in 93 per cent. of all cases treated. The majority of the patients classified as greatly improved were practically free from hay fever during the season except for one or two isolated attacks, so that it may be justifiable to claim almost 70 per cent. of cures. Of the 432 cases 165 had treatments in both 1937 and 1938. In 45 per cent. of these cases the results were better in 1938 than in 1937, in 44 per cent. the results were the same in each year, in 10 per cent. the results were better in 1937, and 1 per cent. did not benefit in either year.

In 1938, as in 1937, a number of patients were treated for hay-fever conjunctival irritation by ionization of the eyes through the closed eyelids. We have no statistical information about the results of this treatment, but we have gained the impression that it proved beneficial in practically every case.

I wish to express my thanks to our honorary radiologist, Dr. Alexander Orley, who was responsible for the organization of the electrical part of the treatment.

The number of medical practitioners in Poland is given by *Minerva Medica* as 12,215, or one doctor for every 2,833 inhabitants. The proportion of Jews is 33.4 per cent. of the medical profession and 9.6 per cent. of the population. Sixty-one per cent. of the practitioners are settled in towns the population of which forms 13.5 per cent. of the total population. The chief causes of death among Polish doctors are returned as follows: cardiovascular disease 40.5 per cent., tuberculosis 17 per cent., malignant growths 13 per cent., epidemic diseases 8 per cent., and suicide 4 per cent.

Clinical Memoranda

Pneumococcal Meningitis, following Mastoidectomy, Treated with M & B 693: Recovery

Although the recorded cases of pneumococcal meningitis treated by M & B 693 are now becoming numerous, the following case, which occurred last September, may yet be of interest because of its unusual features.

CASE RECORD

A healthy and active schoolboy of 15 developed a typical right acute mastoiditis, and was admitted to the Royal Infirmary, Dundee, on August 18, 1938, under the care of Mr. M. J. Gibson. The following day a right Schwartze mastoidectomy was performed, during which the dura was exposed and found to be healthy: the sinus was not exposed. The patient was put on M & B 125, two tablets thrice daily. A specimen of pus taken from the diseased cells at the time of operation contained the pneumococcus in pure culture: the type was not ascertained.

Convalescence was normal until the fourteenth day, when the temperature and pulse rose. On the nineteenth day the mastoid was reopened; the sinus was fully exposed and found to be healthy. Some further cells were removed. During the dressing of the wound on the twenty-second day the sinus wall gave way. When the bleeding had been controlled a clear fluid—? cerebrospinal fluid—welled up into the cavity. Lumbar puncture was performed, and revealed clear fluid under pressure, with a cell count of less than 1 per c.mm., no increase in protein, prompt reduction of Fehling's solution, and a Lange reaction of 00000000. The chloride content was 730 mg. per 100 c.cm. and the Wassermann reaction negative. The same day the patient was given 10 c.cm. 5 per cent. protosil, repeated on the following two days in addition to the M & B 125. The temperature remained high and the boy was seriously ill. On the twenty-fifth day he had a rigor. By the twenty-eighth day he had developed pleurisy on the left side with pleuro-pericardial friction: meningeal symptoms became evident that evening, with a temperature of 104° and pulse of 100. A blood culture, taken while his temperature was still rising, was sterile. He was now taken off M & B 125 and given M & B 693, two tablets thrice daily, with a first dose of four tablets. On the following day and for the next eleven lumbar puncture was performed. Smears of the centrifugized deposit of the cerebrospinal fluid showed the presence of numerous Gram-positive diplococci. At this time both disks showed an early optic neuritis.

The fluid obtained on the thirtieth day was sent to the bacteriologist, who reported the cells to be 2,500 per c.mm. at least, the protein markedly increased, with no reduction of Fehling's solution. No micro-organisms were obtained by culture. On the thirty-first day the cerebrospinal fluid was very turbid: the cell count was 3,266 per c.mm. The patient was delirious and doubly incontinent. There was marked head retraction, kernigism, and extensor plantar responses. The case appeared clinically hopeless. The temperature, which had dropped steadily since the administration of M & B 693, fell to normal that evening, when the continuous muscular twitchings, which had been general for twenty-four hours, disappeared. Again no culture was reported.

Clinical improvement set in the following day, four days after first giving M & B 693. This was maintained, although the optic neuritis grew steadily worse until the thirty-fourth day. Normal plantar reflexes returned on the thirty-fifth day with the return of the abdominal reflex, but neck rigidity and kernigism were present till the thirty-seventh day. M & B 693 was stopped on the forty-first day. Two further lumbar punctures were performed on the forty-second and fiftieth days to ascertain the state of the cerebrospinal fluid, but nothing abnormal was found—in all, a total of fifteen lumbar