The Treatment of Chronic Maxillary Sinusitis by Inhalation Therapy with Bisolvon

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SUMMARY

In a random group of 44 patients with chronic maxillary sinusitis taken from general practice, conventional methods were initially utilized to alleviate symptomatology, viz. antihistamines, antibiotics administered according to sensitivity, steaming, etc., with unsatisfactory results. This group of 44 had all progressed to a stage where antrostomy and drainage would be considered as the next method of treatment. Bisolvon liquid was inhaled in a vaporized form with a Monaghan M510 IPPB for a period of 5 minutes per day from 5 to 7 days. Of the 44 cases treated in this manner, 17 patients with fluid levels resolved completely. The remainder constituted a group of 27 with a radiological diagnosis of 'gross mucosal thickening' or 'opaque maxillary antra'. Twenty of these showed excellent improvement, 5 responded moderately and 2 patients failed to show evidence of any improvement. The inhalation method of mucolytic therapy is discussed below.

Bisolvon causes rarification, thinning and eventual fragmentation of the acid mucopolysaccharide fibres of bronchial mucus resulting in a reduction in its viscosity. There seemed no reason to doubt the hypothesis that this mucolytic agent could be used to alter the viscosity of upper respiratory mucus if administered by vaporized inhalation, so as to concentrate the drug at the affected area. It was considered that if a vaporized mucolytic agent could be inhaled by the patient, biochemical action would penetrate, alter or dislodge the mucous plug of the maxillary antrum to facilitate mucolysis, and free drainage would result.

The trial described below progressed from this hypothesis.

MATERIAL AND METHODS

The trial extended from June 1970 to December 1971.

Patients

These comprised 44 people (34 adults and 10 children), whose upper respiratory symptomatology did not resolve after 7-10 days of conventional therapy. X-ray films of the paranasal sinuses at the end of one week of conventional therapy showed either maxillary fluid levels or gross mucosal thickening, or both, unilaterally or bilaterally. Patients who had septal deviations or dental causes of maxillary sinusitis were excluded from the trial. No acute infective cases were treated by inhalation therapy for fear of directly enhancing the spread in an ascending manner (Tables I - III).

TABLE I. RADIOLOGICAL DIAGNOSIS

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Count</th>
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<tbody>
<tr>
<td>Fluid levels</td>
<td>17</td>
</tr>
<tr>
<td>Gross mucosal thickening</td>
<td>25</td>
</tr>
<tr>
<td>Mucosal polyp*</td>
<td>1</td>
</tr>
<tr>
<td>Mucosal retention cyst*</td>
<td>1</td>
</tr>
</tbody>
</table>

* Diagnosed on second X-ray film, after treatment had cleared the overlying congestion.

TABLE II. COMMON PATHOGENS ENCOURTENDED

<table>
<thead>
<tr>
<th>Organism</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>10</td>
</tr>
<tr>
<td>Streptococcus B haemolytic</td>
<td>12</td>
</tr>
<tr>
<td>E. coli</td>
<td>8</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>6</td>
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</tbody>
</table>

*Date received: 4 December 1972.
TABLE III. ANTIBIOTICS ADMINISTERED ACCORDING TO SENSITIVITY

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>Cloxacillin</td>
<td>13</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>10</td>
</tr>
<tr>
<td>Tetracyline</td>
<td>8</td>
</tr>
<tr>
<td>Ayermycin</td>
<td>3</td>
</tr>
<tr>
<td>Trimethoprim/sulphamethoxazole</td>
<td>2</td>
</tr>
</tbody>
</table>

The common symptoms encountered were, in order of frequency: (i) unilateral nasal obstruction (occasionally bilateral); (ii) continuous postnasal discharge; (iii) huskiness of the voice (which was more common in the morning upon rising); (iv) repetitive episodes of purulent postnasal discharges; (v) unilateral nasal discharge.

The Machine

The Monaghan M510 is an aerosol machine and comprises a 115-volt motor-driven air compressor which is designed for table-top use. The pressure control provides a variable range of positive pressures up to 40 cm of water. Inspiratory flow control allows a variation between 5 and 100 litres of air per minute. Nebulization is continuous, thus ensuring a reservoir of drug at all times. The range found to be most effective in the treatment of these patients is given below:

The volume of inspiratory flow with which the majority of patients could cope with comfortably was found to be between 5 and 10 litres air per minute. The pressure control, which determined the positive pressure required by the patient during expiration, was found to average around +15 cm of water. An average inspiratory movement by the patient measured -5 cm of water. Patients were requested to breathe in normally until the pressure needle touched -5 cm and expire to the value of +15 cm.

Method

The patient was seated comfortably in front of the M510. Five millilitres Bisolvon was instilled in the nebulizer and a correctly fitting face-mask fitted over the patient's nose and mouth. The inspiratory flow and pressure were adjusted to the values described previously prior to commencement. The treatment lasted for 5 minutes. The patient was instructed to breathe normally through the nose for the set time period. Five such treatments were administered on consecutive or alternate days, depending on the convenience to the patient. The subjects were instructed to note any change in nasal discharge and any sudden drainage which might occur, together with its colour.

At the conclusion of the fifth inhalation patients were sent for one occipitomental X-ray of their paranasal sinuses and requested to return one week later.

RESULTS

The results are shown in Table IV.

Side-effects

Mild nasal irritation occurred after the first treatment and subsided after subsequent treatments. Some patients tended to sneeze within 30 minutes after inhalation therapy. The majority of patients volunteered that they had noticed a profuse drainage commence within 2 hours after inhalation therapy. This drainage lasted for approximately 4 hours after the first treatment, and decreased in volume and time following subsequent inhalations.

DISCUSSION

This trial merely attempts to offer an alternative to proof puncture and drainage as an end-stage method of therapy. Once the chronically infected maxillary sinusitis has been relieved and cleared, the onus is on the practitioner to prevent a re-exacerbation of symptoms by appropriate allergen testing and attention to the diathesis of the patient. Where possible, blood was sent for serum immunoglobulin estimation to determine any cases of immunological deficiency, and to date 6 of the 44 treated have a selective IgA deficiency. This of course is where therapeutic problems commence, viz. whether to desensitize to specific allergens, or to administer short courses of steroids during seasonal crises, or whether the injection of Depomedrol into the turbinates will block the vicious cycle of events leading up to maxillary sinusitis.

The patients who were successfully treated were follow-up for a period of 9-15 months, during which pre-
seasonal desensitization was attempted in 30 patients. No recurrence of maxillary sinusitis was observed in this group. The 2 patients who failed to respond (maxillary antral cyst; papilloma) were referred for surgery, which was successful.

It is suggested that a plastic face-mask apparatus with facilities for nebulization be made available for commercial use, so that the advantages of mucolytic inhalation therapy could be brought to a wide group of patients.

REFERENCES

A Possible Case of Neuromyelitis Optica in a Bantu Patient *

W. HIFT, M.A., D.M. (OXON.), F.C.P. (S.A.) AND T. MOODLEY, M.B. CH.B. UNIV. NATAL, Department of Medicine, University of Natal and King Edward VIII Hospital, Durban

SUMMARY

An apparently typical case of neuromyelitis optica (Devic's disease) in a Bantu woman is described. In view of the extreme rarity of disseminated sclerosis and allied disorders in the South African Bantu, and the bearing of this fact on the aetiology of the disease, we feel that the following case is worth reporting.


CASE REPORT

A Zulu woman, aged 30 years, was admitted to King Edward VIII Hospital, Durban, on 5 December 1972, complaining of blindness.

She had been born in the Vryheid district of Natal and lived there until the age of 15. Thereafter she had taken up domestic employment, first in Vryheid, then in Durban. She worked for 7 White families during the following 15 years. She is a woman of abstemious habits, who neither drinks nor smokes, nor does she take drugs of the European kind, or native herbal remedies. There was no family history of eye trouble or any severe neurological disease, as far as she could tell. None of her employers suffered from a similar complaint. During her last employment (2 years) she took a European type of diet. She has had no serious illnesses and, in particular, has had no venereal disease. In October 1972 she gave birth to a normal, healthy baby.

Her illness began on 4 December, with itchiness of the eyes and a boring pain behind the eyes. Her vision began to fail and this progressed rapidly until at the end of 24 hours she was totally blind and was admitted to hospital.

By the time she was seen in hospital the itchiness and pain had gone. She was cheerful, optimistic, alert and intelligent. There was no fever. Examination showed no abnormality, except for the eyes.

The patient was totally blind. Her pupils were widely dilated and totally unresponsive to light. A menace reflex was absent. On fundoscopy the discs were swollen with blurred edges and a filled-in physiological cup. They were of a deep pink colour. The erythrocyte sedimentation rate was 47 mm/h. Haemoglobin was 11.8 g/100 ml and the white blood count 4800/mm³. The Wassermann reaction and the VDRL test of blood and cerebrospinal fluid were negative. X-ray films of skull and chest showed no abnormality. Lumbar puncture produced a clear fluid under normal pressure with a protein content of 30 mg/100 ml and no cells.

The patient was treated with prednisolone 20 mg t.d.s. Her vision returned rapidly. After 3 days she could distinguish light from dark; after 10 days she could count fingers. On discharge on 22 December she could read large print, but not medium or small.

Her dose of steroids was tapered off and she was sent home on a dose of 5 mg t.d.s.

*Date received: 20 February 1973.