patient's health. The voices of both patients are lower in pitch, but there is no other evidence of masculinization. The amount of hair on the face in Case 1 has diminished considerably and she has a much more youthful appearance than before the oophorectomy. The other patients will be followed up for a longer period to assess the results. If patients are enabled to live on in comfort for several years in spite of persistent cancer the value of this treatment will be established, and it is likely that some method will be found to counteract any unpleasant side-effects which may occur.

Since Loeser (1940) suggested testosterone therapy for advanced breast carcinoma several reports have described the effects in soft and osseous tissue dissemination. Additional information is now required on survival periods after this treatment is begun. More than 50 years have gone since Beatson (1896, 1902) wrote of the beneficial effect of oophorectomy in some of these patients, and it has received sporadic attention to the present time. This operation is also being performed in the younger pre-menopausal group of patients after radical mastectomy, and it is necessary to evaluate the end-results after the lapse of an adequate follow-up period.

Regarding the dosage of testosterone, I usually give a big dose during the first course of treatment, which in one patient has extended for 18 months. A careful check is kept on the patient's general condition, including examinations of the blood urea and serum calcium. An important observation is the improvement which occurs after the cessation of hormone treatment, and it is suggested that these interruptions play an important part. When they have obtained the maximum benefit from oophorectomy and androgen therapy there are certain patients with severe pain from osseous metastases who may be helped further by adrenalectomy. The selection of patients for this final form of treatment must be done carefully, and at present it seems that the number suitable for it is small.

Summary

The results of hormone therapy in a group of patients with disseminated breast cancer are described and attention is called to two patients who are in excellent health 5½ and 4½ years later.

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The Minister of Health is to be asked to receive a deputation from the London County Council on the question of the extension of chiropody services provided by the Council under the National Health Service. In the county of London facilities are provided at the rate of 1.38 chiropodist sessions per 10,000 population, but there is no provision in the City of London and in 13 other metropolitan boroughs. The Health Committee of the Council states that the inadequate and unbalanced service is due to the diversity of the arrangements taken over in 1948. They regard chiropody as essentially a preventive service, which could do much to prevent the ill-health resulting from foot trouble, and urge that an extension of the service is a logical development of the functions of the local health authority under the N.H.S. Act. The approval of the Minister was sought for a long-term scheme of extension of the service as a whole by 34%, and a short-term scheme for an immediate extension of the service in those boroughs without any service at all at present. All the clinics would be in existing or projected health service premises. The Minister replied that while appreciating the Council's concern in the matter he did not feel able to approve either of the schemes. Accordingly he is to be asked to receive a deputation.

ACUTE POST-OPERATIVE LARYNGEAL OBSTRUCTION

BY

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Though large series of post-anaesthetic conditions have been reported from time to time, we have found little reference to lesions of the upper respiratory tract. Obstructions of various bronchi by mucus plugs giving rise to segmental and sometimes massive collapse of the lung are well known, but the more serious obstruction at the larynx is notably absent from the literature. Four cases of this grave complication occurring after grafting operations in children are presented.

Case 1

A girl aged 3 years was admitted to the burns unit with a history of having fallen into boiling water six weeks previously. Her general condition was poor and she had obviously lost weight. On examination an extensive granulating area involving her abdomen, back, and both lower limbs was found.

On the afternoon of the third day a grafting operation was performed under general anaesthesia induced with cyclopropane and oxygen and maintained with methyl N-propyl ether ("neothyl") and oxygen. A No. 1 "flexo-metallic" endotracheal tube was passed without difficulty and the operation was uneventful, though the defect was not fully grafted owing to its extent.

Shortly before midnight on the same night very slight stridor was noted, but was not regarded as significant. Next morning the stridor was more pronounced and was accompanied by a moist cough, but there was no other evidence of laryngeal obstruction. Treatment consisted of steam tent, postural drainage, and systemic penicillin. At midday she vomited after a bout of coughing and the larynx went into spasm, but this subsided on careful toilet of the pharynx by suction. Some time after this episode her breathing became more laboured and there was indrawing of the supra-sternal notch. This became more pronounced during bouts of coughing in her effort to clear the air passages of a tenacious sputum. At 4.45 p.m. an acute airway obstruction developed, followed by cyanosis, coma, and convulsions. The latter was localized to the right side of the face and the left side of the body.

An emergency tracheotomy was performed and aspiration of the air passage carried out, with considerable improvement in her colour. On cutting down the dressings on her abdomen to ensure unrestricted respirations an acute dilatation of the stomach was uncovered. This was thought to be due to sucking air into the oesophagus during the airway obstruction, and was deflated with a stomach tube.

Her general condition was still very poor and severe convulsions continued. An intravenous drip was set up and the convulsions were controlled with gallamine triethiodide ("flaxedil"). An initial dosage of 12.5 mg. of gallamine followed by 7.5 mg. within a few minutes sufficed to control this attack. A dosage of 2.5 mg. half-hourly was maintained, but convulsions recurred eight hours later. These subsided only after the administration of 50 mg. of gallamine in divided doses, and 12.5 mg. was given on any

further evidence of twitching. From then on a steady recovery was maintained and a pyrexia of 102° F. (38.9° C.) subsided in a few days.

The tracheotomy tube was removed on the sixth day and grafting was subsequently completed. Her second operation, which was carried out without endotracheal anaesthesia, was uneventful.

Case 2

A girl aged 3 years was admitted with deep burns of the left side of the chest, abdomen, and left arm, which were sustained when her clothes caught fire. She was in good general condition.

Two weeks after admission a grafting operation was done. General anaesthesia was induced with cyclopropane and maintained with neothyl, nitrous oxide, and oxygen. A No. 1 flexometallic endotracheal tube was passed without difficulty. Operation was uneventful and the grafting completed. In the immediate post-operative period she was described as being "chesty," but there was no evidence of any airway obstruction.

Six hours later a mild degree of stridor was noted, and during the night it increased. It continued during the first post-operative day, and was accompanied by very moist chest sounds. Bouts of heavy coughing were productive of a very little tenacious sputum and caused a severe stridor and indrawing of the suprasternal notch. Temperature rose to 103° F. (39.4° C.), pulse 122, and respirations 35.

Treatment consisted of steam tent, postural drainage, and systemic penicillin, with careful observation. Under this regime her breathing became less laboured and the cough more productive. The temperature began to subside on the second day and the stridor had settled by the fourth day. She has made an uneventful recovery, and subsequent examination of the larynx has revealed no abnormality.

Case 3

A girl aged 6 years was admitted with a history of flame burns which occurred during an attack of epilepsy six weeks previously. Her general condition was reasonably good.

Grafting operations were carried out on the sixth and twentieth days after admission. Anaesthesia for these was induced and maintained with nitrous oxide and oxygen and trichlorethylene, and rubber endotracheal tubes were introduced without any difficulty. Six hours after the second operation some stridor was noted, and thought to be due to oedema of the larynx. The usual routine of steam tent and penicillin treatment was adopted, but the stridor showed no signs of subsiding. Twelve hours later she developed an acute respiratory obstruction with deep cyanosis, and an emergency tracheotomy had to be performed with toilet of the air passages by suction catheter. Very moist sounds, especially at both bases, were heard in the chest, and bronchopneumonia was diagnosed.

Twenty-four hours after tracheotomy the tube slipped out of the trachea and into the tissues of the neck, giving rise to surgical emphysema and a left pneumothorax. The tube was reintroduced and the chest aspirated by underwater suction.

Her general condition remained poor for some days, but a final recovery was made. Subsequent chest x-ray films showed a resolving pneumothorax and patchy areas of lung collapse.

Case 4

A child aged 4 years was admitted two years after a flame-burn accident for correction of scar contractures and grafting of the defects. Operation was carried out under nitrous oxide and oxygen and ether anaesthesia, and a rubber endotracheal tube was introduced without any difficulty. Operation was uneventful.

Twenty-four hours later she was very chesty and had some stridor and pyrexia. Treatment with steam tent and systemic penicillin was carried out. For a time she seemed to settle down on this regime, though there were occasional

bouts of distress with expectoration of a thick mucous material. On the fourth day, however, she developed severe respiratory embarrassment with deep cyanosis and coma. An emergency tracheotomy was then performed, followed by the usual routine of careful aspiration and the maintenance of a clear airway. A pyrexia of 100 to 101° F. (37.8 to 38.3° C.) subsided in a few days and her general condition was very much better. The tracheotomy tube was removed five days later.

Discussion

Four cases have been described of an acute post-operative condition of the air passages of such severity as to cause a respiratory obstruction, and it is the purpose of this discussion to consider certain factors which may have given rise to this grave disaster.

All four patients were female children undergoing grafting operations as the result of burns, and all were carried out under endotracheal anaesthesia. No difficulty was experienced in the intubation of any of these cases, and this was carried out by a different specialist anaesthetist in each instance, in two different hospitals, and the operations performed by three different surgeons. Flexometallic tubes were used in Cases 1 and 2 and rubber tubes in Cases 3 and 4.

Grafting operations in children may require many changes in position for the removal of dressings, cleansing, grafting, and redressing. During these procedures the head may undergo many alterations in position in relation to the body, and this may cause the endotracheal tube to rub and produce friction on the lining walls of the airway. When intubation is used in children great care should be taken to avoid this form of trauma.

Cinchocaine ("nupercaine") ointment 10% was used as a lubricant for the tube in all cases. Systemic intoxication due to cinchocaine is well known, but adverse local effects have not been reported to our knowledge.

A search through the literature has revealed very little on the subject of acute post-operative airway obstructions of this nature. Gittins (1942) included allergy and trauma as aetiological factors in acute non-specific laryngeal obstruction, and yet we cannot find reports of this following the use of the large variety of endotracheal tubes and their various lubricants. Emery (1952) suggests that abacterial agents, by interfering with the growth of bacteria, may upset the liquefaction of sputum and thus give rise to a thick tenacious glue-like material which cannot easily be expectorated, and which is found obstructing the already narrowed airway. It is evident that the post-anaesthetic condition we have observed is, in fact, a form of laryngo-tracheo-bronchitis (Briggs and Heseltine, 1952) which has followed the irritation of endotracheal anaesthesia, and the use of antibiotics may well have aggravated the course of the lesion. It is also suggested that pre-operative atropine may be a factor in the production of thick viscid mucus.

Treatment is a very controversial question, and requires clear thinking in this alarming emergency. In a mild case such as Case 3, steam tent, postural drainage, and penicillin may be sufficient to allow the condition to subside, but careful observation must be kept for worsening of symptoms. If the airway becomes so obstructed by narrowing and tenacious secretions that there is indrawing of the suprasternal notch, cyanosis, or acute restlessness, then there is no doubt that other means of relief must be resorted to. Reintubation and tracheo-bronchial suction may be a life-saving measure, and if easily performed will allow an immediate tracheotomy to be carried out as a set procedure. Continued intubation is entirely illogical in that the added trauma must further offend the already inflamed airway and may produce chronic arytenoid oedema with subglottic swelling and ulceration. Early low tracheotomy with careful and frequent suction toilet of the air passages is the treatment of choice. "We always preach early tracheotomy, but practically always do it late; dangerously late" (Chevalier Jackson, 1921a, 1921b).

Careful aftercare is as important as the tracheotomy in maintaining a clear airway, and this must be the whole-time job of a nurse who is trained in performing suction toilet and in care of the tube.

Summary

Acute laryngeal obstruction occurring as a post-operative condition is described in four cases. Its aetiology and treatment are discussed. It is considered that, though there may be no difficulty on intubation, the trauma of an endotracheal tube is an aetiological factor and that cinchocaine used as a lubricant may be contributory. In the treatment of a severe case tracheotomy is preferred to reintubation.

We acknowledge with thanks the co-operation and helpful criticisms of Mr. Emyln Lewis, consultant plastic surgeon to the Welsh Regional Hospital Board, and Mr. A. H. R. Champion and Mr. A. McDowell, consultant plastic surgeons to the Manchester Regional Hospital Board, under whose care these patients were admitted.

[We wish to mention that since this paper was written Dr. J. R. Rook has published an article in which three similar cases are cited (*Lancet*, 1953, 1, 1214).]

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INDIFFERENCE TO PAIN IN LOW-GRADE MENTAL DEFECTIVES

BY

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In the normal course of acute conditions, whether surgical or medical, the symptom of pain is an important factor in diagnosis. In mental defectives, however, this important symptom does not always present. Seven cases are listed below, all occurring in one unit over a period of six months.

Case Reports

Case 1.—A male mental defective (imbecile grade), aged 14, confined to bed, had a series of severe epileptic fits. On recovery he was somewhat confused and irritable. Next day the irritability persisted and he showed some resistance to being moved about at meal-times. Temperatures, pulse, and respirations remained normal. On examination he showed some resentment on movement of the lower limbs, particularly the left, and unnatural mobility was present at the left hip. He could sit up, however, and turn himself in bed. On being referred for x-ray examination a fracture of the neck of the left femur was found.

Case 2.—A male mental defective of low feeble-minded grade, aged 42, suddenly collapsed. He was pale, the skin cold and clammy, the pulse rapid and weak, and the respiratory movements were curtailed. Marked upper abdominal rigidity, but little complaint of pain except on deep palpation. A perforated duodenal ulcer was suspected, and he was admitted to hospital, where a large duodenal diverticulum with ulceration at its base was found.

Case 3.—A male mongol of imbecile grade, aged 24, had an attack of what appeared to be catarrhal jaundice. Recovery initially was uneventful, but his condition rapidly deteriorated with gross liver enlargement and lower

abdominal rigidity. Temperature, pulse, and respirations were normal. He continued to eat normally and did not complain of pain. His condition rapidly became worse in spite of continued apparent "well-being," and he was admitted to hospital, where he died two days later. Post-mortem examination revealed a tuberculous enteritis.

Case 4.—A female mental defective of idiot grade, aged 12, suddenly vomited clear fluid for no apparent reason, and a short time afterwards passed approximately 1½ pints (1,750 ml.) of dark-red offensive-smelling partially clotted blood per rectum. There was marked abdominal rigidity, and she was deeply shocked but maintained a completely detached and uninterested view of her condition, no mention being made of pain, and no signs of pain were noted. She was admitted to hospital, where a diagnosis of Meckel's diverticulum was made.

Case 5.—A male mentally defective macrocephalic, aged 14 (imbecile grade), fell during a grand mal attack and received a severe lacerated wound of the forehead. He showed no evidence of pain, and the wound was cleansed and sutured without administration of an anaesthetic. His attitude throughout the procedure was one of detached annoyance.

Case 6.—A male mental defective of imbecile grade (congenital word deafness), aged 14, suddenly developed a gross swelling of the left testicle. This swelling attained a size of approximately 3 by 2 in. (7.5 by 5 cm.) but did not appear to inconvenience him in any way. It was decided to admit him to hospital, where a biopsy could be carried out to determine the cause of the swelling. A torsion of the left testicle was found.

Case 7.—A female mental defective of imbecile grade, aged 40, was noticed to have a severe herpes zoster affecting the left fifth and sixth thoracic dermatomes. There was no complaint of discomfort, far less of pain. On the condition clearing she presented no symptoms of post-herpetic pain.

Discussion

These seven cases all show absence of pain where pain would normally be expected. Even allowing for individual variation to painful stimuli it is difficult to understand the absence of pain in these cases.

The only similar examples of indifference to pain as exemplified in this series occur in the condition known as congenital universal indifference to pain or asymbolia for pain. This rare condition is generally diagnosed in childhood, when a child is noticed to have a stoical indifference to episodes causing bodily injury. Several cases have been noted during the past few years, and so far no anatomical basis has been found to explain the condition. There appear to be no post-mortem reports in the literature on the examination of brain tissue from any cases. The outstanding feature in this condition is that the patient can name correctly any painful stimulus applied, but at the same time shows no obvious sign of pain and makes no effort to withdraw from the stimulus. It will be seen that in this condition there is no analgesia or thermanaesthesia. So far there are no reports of mental deficiency associated with this condition.

It will be appreciated that the interpretation of painful stimuli presents a major neurological problem. In this series the problem lies in fixing the level at which the normal reaction to a painful stimulus takes place.

A lesion producing indifference to pain probably appears to interrupt the frontothalamic projection fibres.

It has already been determined that lesions involving the thalamus may affect the sensations of pain and sensibility. The thalamic syndrome of Dejerine and Roussy is produced, being characterized by spontaneous pain and hyperreaction to disagreeable stimuli such as heat and cold.

If the lesion occurs in the associated cortical or sub-cortical areas the opposite side of the body is then affected. Position sense is lost and two-point discrimination becomes