

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.

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[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

faulty—astereognosis. Tactile discrimination and weight sense are lost. Crude sense of pain touch and thermal sensitivity are retained, but the degree of recognition may become inconstant. This is the condition of cortical anaesthesia. In discussing lesions affecting the frontothalamic projection fibres the thalamus itself must be considered.

The thalamic nuclei may be divided into three main groups: the cortical relay nuclei, association nuclei, and nuclei with subcortical connexions. None of these nuclei receive ascending fibres. It seems that the area under discussion involves either the association nuclei (dorsomedial, lateral, and pulvinar) or their associated connecting fibres. These nuclei are connected to the following cortical areas: dorsomedial, areas 9, 10, and 12 (Brodmann); lateral, areas 5 and 7; pulvinar, areas 18 and 22.

In the modern technique of frontal leucotomy of the partial combined intervention type (leucopectomy) the object of the operation is the severance of three main groups of fibres passing from the frontal cortex to the thalamus. These groups are: (1) from cortical areas 9, 10, and 45 (Brodmann); (2) from cortical areas 11, 12, 13; (3) from cortical areas 24 and 32.

A recent application of leucotomy has been the relief of intractable pain, generally in terminal neoplastic conditions where normal drugs have become useless and the object of operation is to make the closing stages of life pain-free for the unfortunate patient.

Such an operation does not sever any known pain pathways, but the end-result is that the division of the frontothalamic projection fibres completely alters the patient's reaction to pain. It now appears quite certain that the sensation of pain is in no way altered or abolished, but that the patient ceases to worry about the pain and thus relief is obtained.

It will now be seen that this state closely resembles that found in congenital universal indifference to pain.

It therefore appears that the frontothalamic projection fibres involved in the interpretation of pain and the imposition of pain on consciousness derive from cortical areas 9, 10, and 12, and pass into the dorsomedial nucleus of the thalamus. It can be presumed from anatomical and embryological evidence that connexions exist between the thalami and that integration of interpretation from left and right cortical areas will occur.

In low-grade mental defectives the psychological, intellectual, and personality states in many cases can be compared to the changes found after leucotomy in mental patients. This may point to defective development either in frontal cortical areas or in the fronto-thalamic projection fibres. If this is the case, this hypothesis gives an explanation for the indifference to pain found in low-grade mental defectives accompanying acute surgical and medical conditions.

### Summary

Seven cases of surgical and medical conditions occurring in low-grade mentally defective patients are reported. In the normal patient these conditions are associated with pain of severe degree. In these mentally defective patients there was a marked indifference to pain, although some discomfort was felt in a few cases.

An explanation has been advanced for this indifference to pain on the theory of frontothalamic projection fibres associated with cortical areas 9, 10, and 12 being defectively developed or in defective development of these cortical areas themselves.

A comparison has been drawn between the condition of congenital universal indifference to pain and the cases in the above series.

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## INTRAVENOUS ERGOMETRINE AND THE UNDIAGNOSED SECOND TWIN

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Our purpose in writing this paper is to draw attention to a complication associated with the use of intravenous ergometrine in the control of the third stage of labour. During the past two years, on four occasions in the Princess Mary Maternity Hospital, an undiagnosed second twin has been discovered after the administration of intravenous ergometrine; three of the cases occurred within the space of a fortnight, and this brought the problem to our notice.

### Case Reports

*Case 1.*—The patient, a gravida-3 aged 39, was admitted to hospital as an emergency case of ante-partum haemorrhage four weeks before term. Three hours after admission she delivered spontaneously a live male child weighing 4 lb. 10½ oz. (2.1 kg.). Intravenous ergometrine, 0.5 mg., was given with the birth of the anterior shoulder, but as soon as the child was born it was realized that a twin pregnancy was present. The second twin was presenting as a vertex, and within a few minutes a female child weighing 3 lb. 15½ oz. (1.8 kg.) was delivered spontaneously. The placenta was expressed quite easily after the delivery of the second baby. The twins were in good condition at birth and made satisfactory progress.

*Case 2.*—The patient, a gravida-2 aged 24, was booked for hospital delivery, and was admitted in premature labour at 30 weeks. The uterus was noted to be slightly larger than for the gestation period, but a twin pregnancy was not suspected. Twenty-five minutes after admission an outlet forceps delivery was performed under local analgesia; the baby, a male, weighed 3 lb. 6 oz. (1.5 kg.). Intravenous ergometrine, 0.5 mg., was given with the delivery of the anterior shoulder. A twin pregnancy was diagnosed as soon as this child had been delivered. A vaginal examination showed the presentation to be a footling, and the membranes were ruptured by the operator. Strong uterine contractions began at once, but no progress was made, and after an interval of 8 to 10 minutes a general anaesthetic was started. Vaginal examination revealed a constriction ring in the lower part of the uterus. The anaesthesia was deepened, and with some difficulty a breech extraction was carried out. The child, a male, weighed 3 lb. 10 oz. (1.6 kg.) and was limp and blue at birth; respirations were never satisfactorily established, and the infant died at 55 minutes. A post-mortem examination was not obtained, but the cause of death was presumed to be anoxia and possibly traumatic cerebral damage. The first twin made satisfactory progress.

*Case 3.*—This patient, a gravida-3 aged 25, was booked for delivery in hospital and was admitted in labour two weeks before term. After a labour lasting three hours she delivered spontaneously a male child weighing 6 lb. 14 oz. (3.1 kg.). Ergometrine, 0.5 mg. was given intravenously with the delivery of the anterior shoulder, but only with the delivery of this child was a twin pregnancy diagnosed. Vaginal examination showed that the second twin was