bodies of the sacral vertebrae until it is felt to recede at the lumbo-sacral angle being plainly impossible in all but a grossly contracted pelvis. The error of position of the fingers can be readily proved by attempting internal pelvimetry with radiological control, using a piece of lead in the glove tips of the index and middle fingers. The lead shadow will be seen to be well wide of the mark, even when the perineum is forcibly depressed.

The third factor is the rigidity of the perineum, and, as the type of case in which we most earnestly desire to measure the true conjugate is usually a primipara, this assumes major importance and demands an anaesthetic of reasonable depth, at least, for its removal.

Lastly, the measurement is likely to be of most use in those cases of minor contraction, and these are the very cases where, for the reasons above enumerated, it is most difficult or impossible to obtain.

Conclusion

The conclusion is that the clinical measurement of the true conjugate is either impossible to measure, or inaccurate when measured, in all but cases of severe pelvic contraction; that a genuine attempt to measure it demands in a primipara a full anaesthetic; that the location of the sacral promontory requires practice and skill and is valueless unless performed by one well versed in pelvic examination; and that the measurement, when truthfully obtained, is open to considerable experimental error, in addition to errors due to the particular anatomy of a given patient, such as the depth and inclination of the symphysis.

WHY "POST-ANAESTHETIC" PULMONARY COMPLICATIONS?

BY

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That the great majority of "post-anaesthetic" pneumonias are "post-anaesthetic" in time relation only is no longer open to doubt. Inhalation anaesthesia does not predispose to pneumonia unless there is pre-existing lung disease. The typical post-anaesthetic pneumonia is the result of many minute pulmonary emboli from the operation site, and so is slightly commoner after local than after general anaesthesia. Its most important causes are trauma, mobility of the affected part, and sepsis (Cutler and Hunt, 1922). The control of "post-anaesthetic" pneumonia is thus mainly in the hands of the surgeon, not the anaesthetist. The term is therefore deplorable, because it diverts attention from the real causes and possibly suggests negligence on the part of the anaesthetist.

Aspiration of Foreign Matter in the Trachea

Very interesting observations on the ease with which matter such as blood and mucus enter the trachea have been made by M. C. Myerson (1922); he demonstrated it in 76 per cent. of patients who had had a tonsillectomy under light general anaesthesia, a cough reflex being present. Ochsner and Nesbit (1927) made an even more striking demonstration by placing lipiodol in the mouth of patients who had local anaesthesia of the tonsillar region. Radiographs taken later showed that lipiodol had

passed into the lungs in every case. The same thing happens readily in patients who have pharyngeal anaesthesia as a result of disease.

AN ILLUSTRATIVE CASE

Recently I made a necropsy on the body of a woman of 65 who drowned as a result of taking a cup of tonic (sanatogen) directly into the trachea. A small amount of fluid had entered her trachea on many previous occasions; she was known to have a syphilitic paralysis of the palate. Her body was slightly wasted and cyanosed; the blood was dark and fluid; she had a syphilitic aortitis and aortic regurgitation. There was no obvious pre-existing lung disease. The bronchi were filled with a whitish frothy emulsion, which was not readily distinguishable from pus by the naked eye. Microscopically its nature was clear, but a considerable amount of the sanatogen had been taken up by phagocytic cells. Routine sections showed no bronchopneumonia. There was no post-mortem evidence of the many small amounts of foreign matter which had entered her trachea on previous occasions.

It therefore seems certain that the cough reflex fails as a mechanism of expulsion under light anaesthesia; also that blood and mucus do not appear able to provoke pneumonia by themselves. It is not suggested that foreign matter can enter the lungs with impunity, for that is obviously not so. A typical example of this was a woman of 46 who was rescued from a suicidal attempt in a canal recently. She was resuscitated fairly easily, and was hysterical when admitted to the Derbyshire Royal Infirmary. For some hours she made good progress, but pulmonary oedema developed and she died about thirty hours after jumping into the canal. At necropsy I found a simple acute inflammation of the larynx and trachea, generalized pulmonary oedema, patches of red hepatization indicating early bronchopneumonia, no evidence of pre-existing lung disease, and a normal heart. In this case the cause is clear: it was neither "post-anaesthetic" nor due to embolism. Such cases are not rare, and they serve to emphasize the danger of regarding complacently the blood and mucus which enter the trachea far more readily than most of us realize.

General Anaesthesia as a Cause of Lung Abscess

The role of general anaesthesia in the aetiology of lung abscesses after tonsillectomy has been variously estimated. The usual belief is that the condition is commonest after open general anaesthesia and rare after intratracheal ether or other types of general anaesthetic in which special care is taken to prevent foreign matter entering the trachea. The average incidence is probably 1 in 2,500 tonsillectomies (Moore, 1922), but figures vary from 1 in 358 (Glowacki, 1923) to 0 in 20,000 (Lyman, 1923). A. L. Lockwood (1923) found that out of 208 lung abscesses 201 followed general anaesthesia. M. Manges (1916) noted that lung abscesses were commoner after operations with the patient upright. J. Maxwell (1934), in an exhaustive study, however, finds that the main association is sepsis in the operation field, and favours an embolic origin: such a view frees the anaesthetic from both direct and indirect blame. He also notes that lung abscesses are commoner after tonsillectomy than after dental operations. I have recently made two necropsies which throw some light on the problem.

TWO ILLUSTRATIVE CASES

Case 1.—An emaciated boy of 4 years had a lower left molar tooth removed on October 2. An abscess about five days old was present. The anaesthetic used was an ethyl chloride spray, and the boy did not lose consciousness. He

died nine days later. There was a foul osteomyelitis of the left side of the jaw, pus from which extended into the cellular tissues of the neck, but no mediastinitis was found. The lower lobes of both lungs were almost completely solid from a very large number of small abscesses. In the left upper lobe there was a broken-down abscess three-quarters of an inch in diameter, which may have been older than the others. The pus in all the abscesses was very foul. No tooth fragment could be found though a careful search was made, and this would have been a relatively easy case in which to discover it had it been present. The heart and other organs were normal. It appeared clear from the distribution that these abscesses were the result of inhaled septic matter. It is possible that the basal abscesses were secondary to the one in the left upper lobe, but the history does not support that suggestion. It is difficult to imagine an anaesthetic less likely to favour inhalation of septic matter than a brief ethyl chloride spray. The boy was reasonably well for several days, and then his mouth began filling up with pus, which was very offensive, but which he could not be persuaded to spit out. He almost continually had his mouth full of it, and so there must have been many occasions on which it entered his trachea. The dentist and the anaesthetic were naturally exonerated in this case.

Case 2.—On May 1 I made a necropsy on the body of an elderly woman. A tooth fragment was found in the middle of the right lower lobe of the lung. There was no surrounding abscess, but a diffuse acute pulmonary oedema was present, with blood-stained froth in the trachea and bronchi. This had presumably been caused by the irritation of the tooth, for the heart was normal. She had, however, a rather severe chronic nephritis. In this case the coroner also exonerated the dentist and anaesthetic—there had not been either. The patient had suffered with bad teeth for some years, and parts were frequently breaking off (this was learned after the necropsy). She had resolutely refused to go to a dentist because she was frightened. Her husband left her in apparently good health, and when he returned two hours later she was lying dead on the kitchen floor. The cause of her death was a mystery until the necropsy was made. The tooth fragment was not an embolus, of course; and these two cases show the ease with which foreign matter can enter the trachea in the complete absence of anaesthesia.

Summary

1. General anaesthesia by itself is of very little importance in the aetiology of post-operative lung complications.
2. Aspiration of foreign matter into the trachea and bronchi occurs with surprising ease and frequency.
3. Lung complications have been reduced by attention to the causes of embolism (operative trauma, mobility of the affected part, and sepsis) and great care in preventing the aspiration of foreign matter into the trachea.
4. It is probable that embolism and aspiration are both important causes of post-operative lung lesions and that neither alone can explain all cases.

I am indebted to the coroner for Derby, Captain T. H. Bishop, O.B.E., for permission to publish notes on the necropsies recorded, all of which were made on his instructions.

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CHLOROMA

A CASE HISTORY AND POST-MORTEM FINDINGS

BY

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Chloroma is a disease of particular interest, not only on account of its rarity but also because of its somewhat dramatic clinical course and the fact that it is considered to occupy a position intermediate between the leukaemias on the one hand and neoplasms of the marrow on the other hand. The number of authenticated cases reported in medical literature is small. Roehm, Riker, and Olsen (1937) state that up to the end of 1936 they amounted to only 194, and this figure is probably accurate, since the majority of cases presenting such a severe clinical syndrome as is characteristic of chloroma would, at some phase of the disease, be under hospital supervision and the diagnosis recorded. All these cases proved fatal with the exception of two, in which recovery is said to have occurred following operative removal of the primary tumour.

The aetiology remains obscure. There is a tumour-like hyperplasia, probably of the leucocyte parent cells, occurring primarily in the red marrow. Authorities differ as to whether the tumour cells should be considered myelocytic or lymphocytic: most cases appear to belong to the former category. In the present case the cells in the marrow and substernal tumour showed the presence of oxidase granules when stained by the Goodpasture technique, but they also showed the presence of a dense nuclear membrane which is not typical of the myeloblast. Roehm, Riker, and Olsen report a case in which the cells were too primitive to be labelled either myelocytic or lymphocytic.

Case Record

A girl aged 17, a laundress, was admitted to hospital on September 11, 1937, suffering from general weakness and protrusion of the left eyeball. Ten weeks previously she had had an attack of vomiting lasting three days and pains of neuralgic type in the left side of the face. She was becoming pallid, was easily tired, and developed diplopia.

Clinical Examination.—The patient was grossly anaemic but well nourished, with no jaundice or oedema; the left eyeball showed well-marked exophthalmos, being also dislocated downwards and outwards. The temperature was 100.5° F. The heart rate averaged 115 to 125; the apex beat was displaced half an inch to the left; and the first sound was reduplicated and accompanied by a short mitral bruit. Examination of the lungs revealed no anomaly except unduly harsh breath sounds and scattered rhonchi; there were no moist sounds and no signs of pleural effusion. The abdomen was normal, neither liver nor spleen being palpable. The nervous system was normal, but the ocular fundi showed bilateral papilloedema, scattered haemorrhages, and occasional patches of exudate. Palpation of the left supra-orbital margin revealed a moderately hard mass on the nasal side. Pressure along the sternum showed a positive Craver's sign—that is, tenderness at the level of the fifth costal cartilage. There was some deafness on both sides, but this was of middle-ear type.

Special Investigations.—The first blood count gave the following figures: haemoglobin, 25 per cent.; red cells, 1,080,000 per c.mm.; colour index, 1.3; white cells, 60,000, containing 43 per cent. myelocytes and 9 per cent. myeloblasts. Later counts showed that the white cells remained