FRACTURE OF THE FIRST RIB.

BY

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THE following case of fracture of the first rib is interesting, both on account of its rarity and its clinical similarity to a cervical rib or exostosis.

A female, aged 17 years, complained of a swelling in the right side of the neck. The patient was unaware of its presence until it was noticed first by another girl. She had had "pins and needles" in the right hand and cramp in the arm for some time, and attributed this to an accident two months earlier, when she fell down a few stairs. She did not remember her attitude in falling, nor did she notice pain, tenderness, or bruising. The cramp was felt when the arm was hanging by the side, and was relieved by rubbing.

Examination showed a hard bony swelling, 1 in. above the middle of the right clavicle, fixed and irregular but somewhat rounded in outline, about the size of a walnut. It was continuous, both in front and behind, with the first rib, into which it merged. The space between the middle of the clavicle and the swelling was too narrow to allow the examining fingers to be inserted. There was a slight falling backwards of the anterior end of the clavicle. Between the swelling and the skin the pulsations of the subclavian artery, which was displaced upwards and outwards, could be seen and felt distinctly, giving also a thrill and bruit. The cords of the brachial plexus situated immediately behind the pulsating artery were similarly displaced, and could be rolled over the subjacent swelling with the examining fingers. The radial pulse was altered in volume and force when the arm hung by the side. Sensation and muscular power were unimpaired, and there was no wasting. Fracture was confirmed by x-ray examination.

The unique features of this case are the displacement and the clinical signs and symptoms.

Displacement in fracture of the first rib is quite rare. In the case recorded displacement was the main feature, attracting the notice of others to the swelling in the neck, and causing pressure signs and symptoms. In the literature there is an instance of slight displacement causing the normal curve of the rib to be slightly angular. If it is remembered that the first rib has superior and inferior surfaces with internal and external borders, it can be seen that angular displacement would more likely be upwards or downwards than outwards, which is the case in other ribs with internal and external surfaces and superior and inferior borders.

Complications usually draw attention to the fracture hitherto unnoticed, so that probably the frequency of complications has been exaggerated, uncomplicated fractures being no doubt overlooked. Abscesses above and below the clavicle have required incision and drainage. Empyema, lung abscesses, even rupture of the pleura and lung, followed by death, have occurred as complications. The case now reported is unique in its relation to the subclavian artery, which with the brachial plexus is displaced upwards and outwards.

Site of Fracture.—Fracture at the site of injury occurs by direct violence applied to the posterior and also to the anterior part of the first rib. These areas are protected by the posterior shoulder girdle muscles and the inner end of the clavicle respectively, so that great violence is needed to cause fracture. The costal cartilage and junction of the costal cartilage with the first rib have also been the site of fracture. Any part of the rib between its two extremities is subject to fracture, and the deformity, angulation upwards and outwards, would fairly suggest compression force applied from either end. This part of the rib is shielded from direct violence by overlying structures. It has been suggested that the clavicle might act as a powerful lever, fracturing the underlying rib, like the top lever of a nutcracker, trauma on the shoulder representing the power. This mechanism can only act very rarely, if at all, and in abnormal relations of clavicle to first rib, else fracture of the first rib would be a common occurrence, for injuries and falls on the shoulder are very frequent.

Symptoms and signs are usually so slight as to pass unnoticed, or are overshadowed by concomitant injuries. Indeed, the fracture has very often been discovered during

the investigation of its complications. Still, in a few cases localized pain on breathing, or moving the shoulder girdle or neck, has been felt.

Union is the rule, as in all ribs, yet a case has been described of pseudarthrosis at the site of fracture. In the case here reported there is firm malunion.

A CASE OF
MYOCLONIC ENCEPHALITIS LETHARGICA
SIMULATING HYDROPHOBIA.

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IN the discussion on epidemic encephalitis in 1918, at the Royal Society of Medicine, Dr. Crookshank pointed out that the old physicians used to describe "hydrophobia without the bite of a dog," and that this condition had also been reported in England in 1918. The following case was one in which hydrophobia was thought to be a possible diagnosis.

A. B., female, aged 25 years, up to the morning of November 11th, 1920, was in good health, and with the exception of three attacks of influenza had had good health for many years. On the evening of November 11th she did not feel well; on November 12th she gave up her usual occupation owing to increased feeling of illness. She was first seen by one of us (D. E. Morley) on November 13th, and appeared to be suffering from a mild influenza attack with no special symptoms. When seen on the 14th she was distinctly excited and anxious about herself; she had vomited in the morning, and headache had become a more marked feature. On November 15th, when seen (by D. E. M.) she became, as she had been earlier in the day, maniacal. Sitting up in bed, she shouted that her mouth was paralysed and that she was going to die. The left side of the face was weak but there was no definite paralysis. On the 16th she was wildly delirious, the most marked feature being dread of trying to swallow, and the prolonged laryngeal spasm caused by the attempt to do so. The same ideas of paralysis and death still pervaded her delirium. The condition was such as one would expect to find in a case of hydrophobia, only there was no reasonable excuse for such a diagnosis.

On November 17th she had subsided into a semi-comatose condition and was seen in consultation (with S. E. Denyer). Encephalitis lethargica was diagnosed. The condition found (by S. E. D.) was as follows: Temperature 100°, pulse 88, good; limbs flaccid, no trismus, slight twitching of the facial muscles on the right side, pointing to irritation of the seventh cranial nerve. She also had occasional clonic movements of her arms. The knee-jerks were present, no Babinski, no ankle clonus, tendo Achillis jerks not obtainable, no Kernig's sign. On stroking the foot fairly hard, irregular twitching of the muscles of the outer side of the thigh took place. There had been no incontinence of urine or faeces until this day, when there was a slight incontinence of urine; the bladder was empty. Pupils react to light but are unequal, the left being slightly dilated. No nystagmus. She was in a lethargic state and did not answer questions or appear to be aware of anything that was going on. There was great difficulty in swallowing, owing to the marked laryngeal spasm. A fluid of purulent appearance was frequently regurgitated from the throat. There was subcutaneous emphysema at the root of the neck on the right side. *Tache cérébrale* was present. The abdominal superficial reflex was present. There was no squint or ocular paralysis, no cyanosis, no sweating, no rash, no retraction of the head or pain in moving the neck in any direction. She had been fed successfully with a nasal tube previously, but an attempt to repeat this set up a condition of spasm which made feeding impossible by this means. She was therefore given saline enemata containing sugar, and to these was added 40 grains of hexamine every eight hours.

This treatment was continued, and on November 19th 10 grains of hexamine was administered intravenously. On November 20th she was conscious, and a further 20 grains of hexamine was given intravenously. On November 21st she was much improved mentally, being conscious of her surroundings and able to speak sensibly, though her words were incompletely formed. Feeding now became possible by a stomach tube, though there was still considerable spasm until the tube was in position. Her general condition, however, became worse, and although the emphysema at the root of the neck which had been so marked on November 17th had completely gone, bronchopneumonia supervened and the illness terminated fatally on November 24th.

The temperature varied from 100° to 102°, with the exception of rises to 104° and 105° on the third and fourth days of the illness.

The indications seemed to point to hexamine being of value. The cause of death seemed to be the result of the rupture of one of the constrictor muscles of the pharynx, due to extreme spasm, causing subcutaneous emphysema, with resulting cellulitis and aspiration pneumonia.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CARDIAC MASSAGE IN RESUSCITATION.

PROFESSOR GUNN'S most interesting article on "Massage of the heart and resuscitation," in your issue of January 1st, 1921, leads me to think that it will be of interest to record a case which supplements his experimental findings by some clinical observations.

An adult female, suffering from carious teeth. General anaesthesia was induced with ethyl chloride, and three teeth were extracted without difficulty. Cessation of respiration and sudden pallor immediately ensued. Ether was injected subcutaneously and artificial respiration begun. As the pallor increased, the heart was auscultated and found to have stopped. Artificial respiration was persisted in for about three minutes from the time of cessation of respiration in the hope that the cardiac inhibition would prove a temporary one, but it was of no avail. The abdomen was then opened, and cardiac massage begun. With the other hand artificial respiration was maintained by simple compression of the chest. Pituitrin 1 c.cm. was given subcutaneously. Colour almost immediately returned to the face, showing the efficacy of the artificial circulation. After about five minutes' massage, feeble spontaneous heart beats were felt, and were supplemented at intervals by massage. About two minutes later several deep spontaneous respirations were made in rapid succession. This was at once followed by arrest of the heart and respiration also stopped again. Cardiac massage and artificial respiration were persisted in for forty-five minutes, during which time deep inspirations were made at intervals of about ten seconds—as in morphine poisoning. At first deep, they became shallower and more infrequent, and eventually ceased.

This case is of interest in the light of the theory which Professor Gunn has advanced. Professor Gunn suggests that certain cases of failure in resuscitation by cardiac massage and artificial respiration are due to vagus inhibition. In such a case the heart has commenced again to beat well, after massage; the paralysed central nervous system, including the respiratory and vagus centres, begins to recover; spontaneous respiration begins; then the vagus centre awakens, hyperexcitable after its paralysis, and cardiac inhibition results. From cardiac arrest due to this cause Professor Gunn states that he has been unable to resuscitate animals.

In the case described this sequence of events is closely followed. The heart was initially arrested by vagus inhibition, due to stimulation of the fifth cranial nerve. Cardiac massage and artificial respiration revived the brain. Spontaneous respirations began, immediately followed by cardiac arrest, presumably due to inhibition by the recovering vagus centre. If, as Professor Gunn recommends, atropine had been administered intravenously, it seems probable that this patient would have recovered.

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A CASE OF DELAYED ARSENICAL POISONING.

THE length of time (three months) which elapsed from the taking of arsenic to the fatal result, the large quantity taken, and the nature of the symptoms in the slow poisoning of the nerve tissues, all make this case of interest from a medico-legal point of view, though the taking of the drug was purely accidental, and not the slightest suspicion of attempted suicide ever arose.

Mr. X., aged 68, proprietor of a grocery establishment, who carried on also an extensive pharmacy, had been under my care for some time, suffering from enfeebled action of the heart, but not sufficient to prevent him from following his usual business. At 8 p.m. on February 23rd, 1920, he took by mistake for a preparation of magnesia, which he was in the habit of taking for indigestion, a heaped teaspoonful of arsenic mixed with hot milk; the quantity when weighed equalled 180 gr. Half an hour later he ate a hearty supper of porridge and milk. At midnight he began to vomit, had diarrhoea, and complained of a burning sensation in his stomach. The diarrhoea and straining continued with increased violence

until 3 a.m. When I arrived at 4 a.m. I found him cold, with thready rapid pulse. He was vomiting, and had watery diarrhoea with great tenesmus. Water was at once rejected; the temperature was subnormal, and the pulse 120. He complained most of cramps in his legs and intestines, and a burning feeling in the pit of the stomach, with vomiting and diarrhoea every few minutes. He was quite conscious, and wrote an account of how the accident occurred. I decided with Dr. D. C. Campbell, who had arrived also, that it would be useless to wash out the stomach now, but to relieve pain and restrain the diarrhoea and tenesmus we gave him an enema of a drachm of tincture of opium and one of starch. This relieved these symptoms and the cramps in the legs. He was given albumin water by the mouth during the rest of the night, and then milk and barley water. There was only one motion of the bowels, and this not until late in the evening. When next seen, about 10 a.m., the temperature was normal, and the pulse 100. He was very restless, and complained of fidgets in the legs but no cramps. The conjunctivae of both eyes were slightly congested. No urine was secreted; a rubber catheter was passed, but no urine was found in the bladder. He was then seen by Dr. H. McKisack, and diuretics were ordered, with mustard and linseed poultices to the loins in order to encourage the action of the kidneys and assist in the elimination of the poison. Magnesium sulphate was also given freely. This had the desired effect, and urine was freely passed. The patient was now able to be up and about, and soon was walking in his garden; eventually he even walked down to my house.

The first untoward symptom that showed itself was a feeling of pain in both arms and forearms which he compared to neuralgia, for which he was given phenacetin and aspirin, with massage. This increased to a feeling of numbness in the parts supplied by the radial nerves of both hands, so that he was unable to hold a cup or spoon firmly, but he was still able to walk. Dr. McKisack, who again saw him with me, suggested in addition to the potassium iodide which he was now taking, and the massage, that he should have a continuous current applied, and for this reason he was removed to a nursing home in Belfast on April 30th. He was then able to walk, but said his feet felt as if he were walking on wool. Very soon after he was brought there he was found to be ataxic in his gait; he was unable to stand upright if his eyes were closed, or to make an attempt to walk if his eyes were closed without falling. The knee-jerks gradually became lost and ankle clonus appeared. He became slowly but steadily worse, hypostatic pneumonia developed, and death took place on June 13th by slowly ascending paralysis. Up to the end arsenic could be found in the urine.

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A TUMOUR OF THE NECK.

THE following case may be of interest, especially from a diagnostic point of view:

Mrs. W. was admitted to the Wakefield Hospital in March, 1920. For five years she had suffered from an enlarged tonsil (right). At intervals she had acute attacks accompanied by pain and increased difficulty in swallowing, which subsided after the discharge of pus. It was ascertained afterwards that the pus came, not from the tonsil, but from the ear. Recently the tonsil had become larger, and the swelling appeared under the lobule of the ear, and another in the submaxillary region.

On examination, there was a swelling about the size of a chestnut just below the lobule of the ear, which seemed to fluctuate. There was another similar swelling in the submaxillary region. The mouth could be opened easily, and the so-called enlarged tonsil was seen to project from between the pillars of the fauces and extend across the pharynx, leaving only a small space on the left side for the passage of food. The mucous membrane covering it was of normal colour, and palpation of it caused no discomfort.

A curvilinear incision was made behind the angle of the jaw, revealing almost immediately a solid tumour which proved to be the size of a duck's egg, and of similar shape, except where an outgrowth, softer than the rest of the tumour, passed outwards towards the lobule of the ear. The tumour was shelled out with ease, save perhaps where various seekers after pus had pursued their vigorous