on auscultation of the heart. These signs of mediastinal emphysema are generally not marked, the gases usually spreading with comparative ease and presenting as subcutaneous emphysema, with or without pneumothorax. With mediastinal emphysema an associated pneumothorax is present in one-third of the cases.

Case Report

A boy aged 8 years was admitted to hospital for enucleation of an eye. Pre-operative examination revealed a plump child, weight 58 lb. (26 kg.), height 3 ft. 9 in. (114 cm.), nose blocked, pigeon chest, emphysematous vesicular breathing. Premedication consisted of chloral, 8 gr. (0.5 g.), at 9.25 a.m., and atropine, 1/100 gr. (0.65 mg.), at 10.15 a.m.

At 11 a.m. 200 mg. of thiopentone sodium as 2½% solution, followed immediately by 20 mg. of succinylcholine chloride ("scoline"), was given intravenously. After the usual fibrillations of the muscles, a size 8 "portex" endotracheal tube was passed easily through the mouth into the trachea under direct vision, using a Macintosh laryngoscope. The endotracheal tube was connected to a Boyle machine, and inflation of the lungs with oxygen was begun pending the return of spontaneous respiration.

As the bag was compressed, the sudden rapid appearance of subcutaneous emphysema of the face and neck was noticed. The Boyle machine was immediately disconnected from the endotracheal tube, the laryngoscope was inserted, and the tube was removed from the larynx and immediately replaced. The patient was still apnoeic as a result of the succinylcholine chloride, so the tube was reconnected to the Boyle machine and very gentle rhythmic compression of the oxygen-filled reservoir bag was restarted. The subcutaneous emphysema had spread superiorly up to the eyebrows and inferiorly on the anterior abdominal wall down into the scrotum. At this time the pulse could not be palpated, but it rapidly returned to full volume in less than two minutes at a rate of about 150 beats a minute. The mucous membranes were pink throughout, except for a period of about one minute following the appearance of the subcutaneous emphysema, when they were cyanosed. Spontaneous respiration began again in about five minutes.

In view of the patient's condition the operation was cancelled and he was returned to the ward with the endotracheal tube *in situ*. At about 11.15 a.m. he started to object to the presence of the endotracheal tube, but was restrained from removing it, and amethocaine 2% solution was sprayed down and round the tube. Portable x-ray examination of the chest revealed a bilateral pneumothorax, retroperitoneal gas, and subcutaneous emphysema. Bilateral puncture of both pleural cavities was performed with needles attached to tubes leading under water. Gas bubbled out rapidly and x-ray examination showed re-expansion of both lungs. The patient was then sedated with paraldehyde, and three and a half hours after the onset of the surgical emphysema the endotracheal tube was removed. Penicillin, 500,000 units, and streptomycin, 0.5 g., were given twice daily as a prophylactic against the possible development of mediastinitis, and the patient made an uneventful recovery, the subcutaneous emphysema being almost entirely reabsorbed by the following day.

Comment

The cause in this case appears to be the institution of positive pressure, leading to the sequence of events described by Macklin: rupture of the alveoli and perivascular tracking of the oxygen to the mediastinum, with extension from there to the neck to present as subcutaneous emphysema, and rupture of the mediastinal pleura to give bilateral pneumothorax with collapse of the lungs.

Trauma to the tracheal mucous membrane, as has been described by others (Barrett and Thomas, 1944; Gordon, 1950), seems to be unlikely, in view of the ease with which the endotracheal tube was passed.

Summary

The causes, mode of production, and treatment of surgical emphysema as a complication of anaesthesia are discussed, and a new case is reported.

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Medical Memoranda

Winged Scapula Caused by a Solitary Exostosis

Solitary exostoses of the scapula of sufficient size to cause symptoms occur very rarely. Du Mortier and Halpert (1934), who reported two cases, could find only 18 further cases in the literature covering the previous 100 years; Mouchet, who showed one case to the Société d'Anatomie de Paris in December, 1927, had personal knowledge of two further cases (quoted by Pouzet and Labry, 1929). Five other isolated cases have since been reported (Pouzet and Labry, 1929; Hartmann, 1930; Lunardi, 1934; Taylor and Schaffer, 1937; Leffmann, 1947). In a survey of the causes of "snapping scapula" collected by Milch and Burman (1933), subscapular exostosis was mentioned, these authors citing the case described by McWilliams (1914), which is included in the series of Du Mortier and Halpert.

In 15 of the cases in the series of Du Mortier and Halpert the exostosis grew from the subscapular surface, thus causing winging of the scapula or interference with shoulder movement. Of the remaining five cases, four were inadequately described by the original writers, and in one instance (Heurtaux, 1886) the exostosis arose from the spine of the scapula. In the five further cases now collected from the literature, the situation of the exostosis was at the medial angle or the vertebral border of the scapula, except in one, in which it was attached to the axillary border (Taylor and Schaffer, 1937). There appears to be no sexual predominance, 14 being male and 12 being female.

In all but four cases symptoms occurred before the age of 20, and in the remainder it is likely that the condition had existed for some years before advice was sought. Because of its rarity it was thought worth while reporting a case of subscapular exostosis with some unusual features.

CASE REPORT

A bus driver aged 23 attended the out-patient clinic complaining of aching pain in the left shoulder and limitation of shoulder movement.

On examination an extensive deep-brown pigmented naevus was found to be situated over the left shoulder and a pronounced winged scapula which could not be passively corrected. The deformity had apparently been present for about 10 years, recently becoming more noticeable. The arm could be abducted to 160 degrees, this being accompanied by a creaking sensation over the scapula. Palpation deep to the vertebral border of the scapula revealed a large bony mass. X-ray examination showed this to be an exostosis growing from the subscapular fossa and impinging on the uppermost three ribs, which bore slight indentations at the points of contact. At operation the exostosis was approached by a longitudinal incision over the vertebral border of the scapula. The exostosis was easily excised and was found to be pear-shaped, 3½ in. (9 cm.) in length

by 2 in. (5 cm.) at its greatest width. It was attached by its narrower extremity to the costal aspect of the vertebral border. The wider end bore rounded facets indicating the points of contact with the ribs.

The pathological report stated that the specimen consisted of normal compact and cancellous bone, covered by a layer of hyaline cartilage at its wider end, and without any evidence of haemopoiesis or malignancy.

The post-operative recovery was uneventful, a full range of painless movement, together with disappearance of the "winging" of the scapula, being obtained in eight weeks.

COMMENT

In only two cases of the present collected series of 26 instances of exostosis of the scapula were the exostoses found to be present at a site other than the medial angle or vertebral border. Du Mortier and Halpert (1934) believed the exostosis to grow from an accessory centre of ossification, but Lunardi (1934) thought it to be due to an overgrowth of the epiphysis of the vertebral border.

Treatment consisted in excision of the exostosis as close to the scapula as possible, and sometimes a portion of the scapula may need to be resected with it. The results of operation appear to be uniformly good, and even in cases in which winging has been present for many years, as in the case here described, correction of the deformity and return of full function is the rule.

I wish to thank Mr. G. Hyman, under whose care this case was admitted and who performed the operation, for permission to publish and for encouragement and advice; and Dr. R. A. Garson, assistant pathologist to the Halifax Group of Hospitals, for his examination of the specimen.

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Topical Analgesia for the Urethra

Topical analgesia for urethral instrumentation has been practised for many years, during which time cocaine and a large number of synthetic derivatives have been tried with varying results. All of these drugs have a small but undeniable mortality risk from toxic absorption. The blame for this must be attributed to the operator who, with complacent disregard for the risks, instils the drug into the urethra. Although cocaine has fallen into disrepute for nerve blocks or infiltration techniques, it still retains an important place as a topical agent, and if due regard is paid to the maximum dose it is as safe and efficient as its synthetic rivals.

Only too frequently are local analgesic drugs used with unwarranted abandon; and since, in efforts to produce perfect analgesia, the solution is instilled too liberally, accidents still occur. Recently a preparation, "xylocaine gel" containing xylocaine (lignocaine hydrochloride) 2% w/v, has appeared on the market, supplied in 15-ml. tubes for urethral application. The total quantity of xylocaine in any one pack amounts to 300 mg., and, just as it is impossible to empty a tube of toothpaste completely, so also will the amount of xylocaine which can be administered be appreciably less than the total dose available. With such a packing, some protection is offered against overdosage.

The efficiency of 2% xylocaine solution in providing good topical analgesia for the urethra has been attested by many workers. In a series of more than 800 cases Persky and Davis (1953) limited their dose to 10 ml. and reported good results with only one doubtful toxic reaction, while Haines and Grabstald (1949) observed no untoward effects in 250 cases. The results obtained with xylocaine gel

appear to have been equally good (Romanus, 1951; Nesbitt and Baum, 1952).

I have now administered xylocaine gel to 150 patients, ranging in age from 16 to 84 years, for a variety of per-urethral instrumentations with good results and no toxic reactions.

TECHNIQUE

Males.—The bakelite nozzle (supplied in each package and sterilizable by boiling) is screwed on the end of the tube of gel and a small amount is squeezed beyond the tip to lubricate the nozzle. The penis is cleaned in the usual fashion and the nozzle inserted into the meatus. The contents of the tube are then expressed gently into the urethra. As the nozzle is removed, the penis is compressed with a penile clamp or rubber band to prevent leakage. The gel is massaged gently into the posterior urethra and 10 to 15 minutes are allowed to elapse before proceeding with the operation.

Females.—A throat swab with enough wool to cover the terminal 1 to 1½ in. (2.5 to 3.8 cm.) is dipped in xylocaine gel which has been expressed into a dish. The genitals are cleaned, and the prepared swab is inserted into the urethra and kept there for 10 minutes.

RESULTS

The methods described have been used on 100 males and 50 females for cystoscopy, retrograde pyelography, passage of sounds, and a few cases of simple cystodiatheirmy.

Males.—In the male group the directions given must be followed with care. In most cases good surface analgesia was provided, but this in itself does not suffice where a narrow urethra has to be stretched, causing sensations of deep pressure. A stricture, an enlarged prostate, and a contracted urogenital diaphragm all provide obstructions to the passage of an instrument, and are therefore causes of discomfort. When the urethra is essentially normal a good result can be expected. The result was satisfactory in 89 out of 100 cases.

Females.—Commonly no analgesia is used for cystoscopy in the female, but there is no doubt that discomfort is caused by the passage of a rigid instrument whose position is constantly changing. Most of the females in this series had previously been catheterized in the ward; the majority volunteered that cystoscopy with xylocaine gel was no more unpleasant than the simpler ward procedure carried out without analgesia. The result was satisfactory in 48 cases and unsatisfactory in 2; one of the latter had a large neoplasm encroaching on the internal meatus, and the other was a nervous girl of 16, for whom any form of local analgesia would have been unsuitable.

The method is not recommended as a general rule for cystodiatheirmy, as the pain from this is not abolished by topical analgesia of the urethra. However, where it has been necessary merely to fulgurate one or two seedling papillomata on the fundus of the bladder, many patients have found the procedure quite tolerable.

The advantages of topical analgesia for urethral instrumentation include the simplicity of the method, the lack of general disturbance to the patient, and the retention of consciousness, which allows a supervising nurse to be dispensed with, as, for example, when retrograde catheterization is being carried out in the x-ray department.

Toxic Reactions.—Although no toxic reactions were seen in this series a second type of reaction was encountered in a man who complained of nausea and faintness when the gel was injected too rapidly, causing localized distension of the urethra. This reaction, although not dangerous, may cause considerable distress to the patient.

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