"Clicking" pneumothorax developed in a patient following the performance of a thoracic paravertebral block for the relief of post-herpetic neuralgia. The air escaped in, possibly while the stilette was being removed and the syringe fixed during the procedure. A bedside chest film failed to reveal the presence of air in the pleural space. Radiological examination of the chest was repeated in the upright position, two days later, because of the persistence of symptoms suggestive of pneumothorax. This confirmed the diagnosis. Spontaneous reabsorption occurred within five days.

"Clicking" pneumothorax is an uncommon clinical entity. The characteristic feature is the presence of Hamman's sign, a noise described as clicking, bubbling or crunching in character, heard on auscultation near the apex of the heart in certain postures and in some instances by the patient himself and others. In all cases so far reported it occurred spontaneously (Hamman, 1939; Sadding and Wood, 1939; Scott, 1957; Semple and Lancaster, 1961).

The following case report describes a patient who developed this condition after a thoracic paravertebral block.

**CASE REPORT**

A 40-year-old healthy hypersthenic man with early post-herpetic neuralgia of the left side of the abdominal wall was referred for opinion after medical treatment had failed. It was decided to try a paravertebral thoracic nerve block from the ninth to the eleventh thoracic. Since the patient had to return to another hospital on the same day after the first treatment, it was decided to omit the premeditation. The patient was put in the right lateral position and the back was prepared and draped with sterile towels. A 21-gauge spinal puncture needle with stilette was introduced at right-angles to the skin inches from the tip of the spinous processes of T8 and T10 after raising intradermal weals. The needle was advanced until it struck bone. The marker was adjusted at a distance of 1 cm from the skin and the needle was partially withdrawn and passed over the rib to a depth of less than 1 cm. The stilette was withdrawn and a syringe filled with 10 ml of 1.5 per cent lignocaine solution was attached to the needle. After the negative aspiration test, 6 ml of the solution was injected at that point and 4 ml while the needle was being withdrawn. Another similar injection was made two spaces lower and the patient was placed supine. Five minutes later the patient complained of heaviness in the chest on the left side. Except for a slight rise in pulse rate (from 80 to 108 beats/min) there was no change in vital signs. The feeling of heaviness was soon accompanied by non-radiating generalized pain in the left side of the chest. No sweating, breathing difficulty or any other feature of acute distress was noted. Percussion and auscultation of the chest revealed slight impairment of breath sounds and vocal fremitus on the left side. A chest radiograph was taken in the supine position in bed. No radiological evidence of pneumothorax was found and the patient returned to his hospital 1 hour later. Two days later the patient was placed in the upright position. He complained of hearing a noise in the chest in certain postures and had slight pain on deep inspiration. On examination, the breath sounds and vocal fremitus were found slightly impaired on the left side. On rolling the patient in bed a loud rough clicking sound was heard at the front of the left side of the chest near the cardiac apex. The sound was best heard when the patient lay on his left side; it disappeared on his sitting up. A chest radiograph was taken. A fine hair line parallel to the left cardiac border was seen distinctly and there was doubtful pneumothorax in the left apical region. An apicogram was taken which clearly revealed the presence of pneumothorax on the left apex (fig. 1). Two days later his only complaint was slight pain in the epigastrium. On examination there was no radiological evidence of pneumothorax.

**DISCUSSION**

The pathognomonic sound of "clicking" was first observed by Laennec who was unable to associate it with any known clinical entity.
Hamman (1939) described an inconstant crackling, burbling sound near the apex of the heart in a patient with subcutaneous emphysema and radiological evidence of air in the mediastinum, thus establishing the clinical entity of “clicking” pneumothorax. Chapman (1955) and Scott (1957) further defined the condition and pointed out that Hamman’s sign was much more commonly seen with shallow left apical pneumothoraces. Our patient had a shallow left apical pneumothorax and Hamman’s sign was present. He thus presented a typical case of “clicking” pneumothorax.

All cases of “clicking” pneumothorax reported in literature have occurred spontaneously on the left side. Scadding and Wood (1939) detected a crackling sound in two cases of induced pneumothoraces; this disappeared with the addition of air in the pleural space—150 ml in one case and 300 ml in the other. They ascribed the sound to forcible separation of pleura brought about by the movement of an air bubble consequent on cardiac activity and added that the “clicks have not been heard in association with larger pneumothoraces”.

The possibility of pneumothorax occurring after thoracic paravertebral block is high even in the hands of the specialist (Moore, 1965). The occurrence of pneumothorax as a result of thoracic paravertebral block should not go undetected especially if there are suggestive symptoms such as sudden cough during the procedure, pain in the chest, sweating, tachycardia and difficulty in breathing. Pleural puncture is indicated by irritative cough or sharp pain coming on during the procedure. None of these symptoms or signs were noted in our patient while the block was being performed.

We presume that air entered through the needle while the stilette was being removed and the syringe fixed during the performance of the block. The bedside X-ray did not reveal the presence of a pneumothorax, but the patient was kept under observation on account of the feeling of heaviness and pain in the chest and the slight diminution in vocal fremitus and breath sounds, observed after the block.

This case adds further evidence against Hamman’s concept that air enters the mediastinum before entering the pleural space to produce a systolic click in a case of pneumothorax.

REFERENCES

PNEUMOTHORAX “CLIQUETANT” CONSECUTIF A UNE INFILTRATION THORACIQUE PARAVERTEBRALE: A PROPOS D’UNE OBSERVATION

Sommaire
Un pneumothorax “cliquetant” s’est constitué chez un malade, à la suite d’une infiltration thoracique paravertebrale pour une névralgie post-zostérienne. Une certaine quantité d’air s’échappa à l’intérieur, probablement pendant que l’on procédait à l’ablation de la aiguille, la seringue étant demeurée fixée au cours de cette opération. Un cliquet thoracique a été noté au lit du malade ne permit pas de révéler la présence d’air dans la cavité pleurale. Un examen radiologique du thorax fut répété en station debout, deux jours plus tard, du fait de la persistance de symptômes évocateurs d’un pneumothorax. Cet examen confirmait le diagnostic. Une réabsorption spontanée de l’air se produisit en l’espace de cinq jours.
BOOK REVIEW


This is a book written for those interested in neurosurgical anaesthesia; it is not, however, only a textbook of neurosurgical anaesthesia. The author takes a comprehensive look at the whole field, including in his book large sections devoted to the anatomy, physiology and pharmacology of the central nervous system. The inference from this, i.e. that those working in neurosurgical anaesthesia should have a wide and detailed knowledge of the central nervous system, is a welcome one. Thus, part I (pp. 3-150) deals firstly with the anatomy of the central nervous system and correlates anatomical structure with function and then with cerebral circulation and metabolism; part II (pp. 153-291) reviews the anaesthetic pharmacology of the CNS; in part III (pp. 295-361) the physiological effects of hyperventilation, hyperthermia, electronarcosis, hypotension, hyperbaric oxygen and extracorporeal circulation are considered; part IV (pp. 365-397) covers the pathophysiology of hypoxia and the management of cardiac arrest; the final section, part V (pp. 401-526) is the one which deals with anaesthetic management. In dealing with each of these areas the author has covered the literature in great depth and each section concludes with a most valuable reference list, which includes material from the world literature.

The high promise of the book is, unfortunately, not fully realized. The section on Anatomy and Function is particularly disappointing in that the descriptions given are neither clear nor illuminating, and one might as well read a pure anatomical text. No real effort seems to have been made to interpret these topics in a manner helpful to anaesthetists. Another disappointing feature is the quotation of totally contradictory statements without any attempt being made to reconcile or explain the discrepancies. As a result the reader, and this would apply particularly to any trainee reading the book, finds himself confused by reading some of the sections. He may also find himself irritated by the many instances of repetition which result largely from the lay-out of the book.

On the other hand, there are many excellent parts; in particular, the accounts of the physiology of cerebral blood flow, cerebral metabolism, hyperventilation and central venous pressure are most lucid and helpful. The section on hypotension is also very rewarding, except for the omission of any discussion of the important “water shed” pathology frequently seen in this condition.

This, then, is a book which should be in the libraries of all Anaesthetic Departments which engage in neurosurgical work, but selective reading of a borrowed copy is recommended for the individual, especially since the price in this country is high.

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