interval, but has been ineffective in decreasing ventricular ectopy. If electrolyte imbalance exists, rapid intravenous digitalization may itself cause ventricular ectopy.

Primidone, a barbiturate, has recently been described to be an effective drug for treatment of LQTS. Numerous earlier reports have attributed efficacy to other phenobarbital preparations as well. Thus, further evaluation of rapid acting anticonvulsant drugs would be useful as they may be helpful during the perioperative period.

Surgical ablation of the left stellate ganglion is reported to decrease both the Q-T interval and ventricular ectopy in some patients with LQTS. However, this has not been the uniform experience, and some patients have not been improved. Nevertheless, temporary pharmacologic blockade of the left stellate ganglion may be an alternative therapy for suppression of otherwise refractory malignant ventricular ectopy encountered in the perioperative period.

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Pneumochylothorax: A Rare Complication of Stellate Ganglion Block.

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The following is a report of a rare complication of stellate ganglion block.

REPORT OF A CASE

A 24-year-old woman had pain in her left wrist for one year. She had been treated by manipulation under anesthesia and an intra-articular injection of hydrocortisone. This relieved the pain for only three weeks. Roentgenograms of the wrist were normal and the orthopedic surgeon did not feel that surgical exploration was justified.

The patient complained of severe pain in the back of her left hand and wrist and at the base of her thumb. The pain was disabling as she was left-handed and a clerical worker. On examination tenderness was at the base of the first metacarpal from both light and deep palpation. Sensation was diminished over the dorsal surface of the thumb, index and middle fingers and palmar surfaces of the terminal phalanges of the same digits. A loss of abduction of the thumb was also present.

To exclude a peripheral neuropathy, hemoglobin, white blood count and differential, peripheral blood smear, a glucose tolerance test, serum folate and vitamin B12 levels and nerve conduction were determined and found to be normal. To determine whether a sympathetic dystrophy was present, a diagnostic left stellate ganglion block was attempted, employing the standard anterior paratracheal approach. No abnormalities were noted on positioning the patient except the suprasternal notch appeared to be low. After infiltration with a local anesthetic, a 22-gauge 5-cm needle was inserted 3 cm above the sternoclavicular joint in the groove between the trachea and the belly of the sternomastoid muscle. There was no resistance to passage of the

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needle, but contact with the transverse process of the seventh cervical vertebra was not made after several attempts. No blood or air was aspirated and eventually the procedure was abandoned without local anesthetic being injected. Immediately afterward, the patient complained of pain in the chest and inability to take a deep breath. Percussion and auscultation of the chest was normal on both sides with good air entry in all areas of the chest. Chest roentgenogram (fig. 1) showed no pneumothorax and a provisional diagnosis of possible trauma to the left phrenic nerve was made. The patient was sent home after a period of observation with analgesics for the pain.

The following day the patient continued to have left chest pain and respiratory difficulty and was admitted to our Intensive Care Unit. Although cyanosis was not evident, she had a respiratory rate of 50/min. and her accessory muscles of respiration were in use. Heart rate was 140 beats/min and regular and arterial blood pressure 130/100 torr. On percussion, resonance of the left upper chest was increased with dullness of the lower part. Breath sounds were diminished on the left. Chest roentgenogram (fig. 2) showed a left pneumothorax with a fluid level. With 86 per cent oxygen from a Hudson mask, $P_{\text{aw}}$ was 144 torr, $P_{\text{aco}}$ 34 torr, pH 7.35, and base excess $-6$ mEq/l.

Under local anesthesia, a drain was inserted in the fifth intercostal space in the mid-axillary line and 675 ml of milky fluid was obtained immediately, and a further 700 ml drained over the next hour. Laboratory examination (ether extraction) confirmed that the fluid was chyle.

With drainage of the fluid, vital signs returned to normal. Total drainage over the first 24 hours was 1650 ml, but the drainage was less on successive days. On the fifth day after admission, the drain was clamped for 24 hours and then removed with no accumulation of fluid. Eight days after admission, the patient was discharged. She was followed up regularly over the next 3 months with no evidence of any recurrence of the chylothorax.

**DISCUSSION**

There are many previously reported complications of stellate ganglion block, including subarachnoid injection, paralysis of the recurrent laryngeal nerve, puncture of the thyroid gland, the internal jugular vein, and common carotid artery and pneumothorax. The present case of chylothorax appears to be an extremely rare occurrence. Bonica reported a case of damage to the thoracic duct which was accidentally cannulated while performing a continuous stellate ganglion block, using a large bore needle for catheterization.

Considering the relationship of the left stellate ganglion and the thoracic duct, it is surprising that damage to the thoracic duct does not occur more frequently. The thoracic duct passes through the thoracic inlet into the neck in close contact with the left mediastinal pleura and then arches laterally at the level of the transverse process of the seventh cervical vertebra. Here the duct runs anterior to the stellate ganglion which lies on the longus colli muscle between the base of the transverse process of the seventh cervical vertebra and the neck of the first rib. The thoracic duct usually arches up about 4 cm above the clavicle before descending to join the junction of the left subclavian and internal jugular veins. On the right side the smaller right lymphatic duct follows a similar course. The duct therefore lies in the path of the usual approach to the stellate ganglion, and damage to it is a potential hazard, though very rarely seen in clinical practice. Yet, pneumothorax is a well-documented complication. In our case, chylothorax was possibly the result of combined damage to the dome of the pleura and the thoracic duct following multiple attempts without making contact with the bone. Roentgenographic control of
Needle positioning is not usually necessary for diagnostic stellate blocks. However, for difficult cases or for neurolytic injections, roentgenographic control appears to be mandatory to confirm correct needle placement and to prevent damage to adjacent important structures.6

Iatrogenic traumatic chylothorax is generally considered to warrant a trial of conservative treatment for at least 2 to 4 weeks before resorting to surgical ligation of the duct.5,6 Fortunately our patient responded well to simple pleural drainage within this period and it was not necessary to consider further measures. After the first 24 hours drainage was not large enough to require parenteral triglyceride, fat soluble vitamins, or protein replacement of the chylous losses and the patient was simply maintained on a normal oral diet. Chyle may reaccumulate in the pleural cavity several weeks after the chest drains have been removed, so careful and regular follow-up for some months after apparently successful resolution of the chylothorax is required.5,6

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Anesthesiology

Pourfour Du Petit Syndrome—Hypersympathetic Dysfunctional State Following a Direct Non-penetrating Injury to the Cervical Sympathetic Chain and Brachial Plexus

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Blunt trauma to the brachial plexus can produce reflex sympathetic dystrophy with increased sympathetic activity in the affected extremity. There are no reports, however, documenting sympathetic hyperactivity unaccompanied by pain in an anatomic region of the body not supplied by the injured plexus. In this case, a hypersympathetic dysfunctional state developed following a direct nonpenetrating injury to the cervical sympathetic chain and brachial plexus. What was unusual is that sympathetic activity to the eye and face was also affected on the ipsilateral side.

Pourfour Du Petit, a French physician during the Napoleonic wars, was the first person to describe the functions of the cervical sympathetic chain. His treatment of many neck injuries secondary to slash wounds from swords provided a unique opportunity to study direct injuries to the cervical sympathetic chain. He was also the first physician to note the signs of increased sympathetic activity in the eyes and upper extremity and relate these to the injuries of the cervical sympathetic chain,1 and hence the name Pourfour Du Petit syndrome is given to this patient’s condition.

REPORT OF A CASE

A 38-year-old woman sustained direct blunt trauma to the left side of the neck and shoulder when hit by the main-sail boom of a sailboat. The patient immediately experienced left upper extremity (LUE) and shoulder pain with decreased range of motion six hours postinjury. Twenty-four hours postinjury physical examination revealed a cold left hand with no evidence of vascular injury. Her peripheral vascular

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