Biehl and Vilter (1954) have shown that the peripheral neuropathy due to isoniazid is a result of pyridoxine deficiency and may be prevented by the combined administration of isoniazid and pyridoxine. Isoniazid combines with pyridoxine in the tissues and the compound is excreted in the urine as the isonicotinyl hydrazone of pyridoxine. They mention that other factors may be involved in the production of side-effects. In view of the structural relationship of nicotinic acid to isoniazid a metabolic antagonism has been postulated resulting in nicotinic-acid deficiency (Pegum, 1952). As ethionamide is, like isoniazid, a derivative of isonicotinic acid, it may have played some part in the clinical picture described above. The predominant role of vitamin deficiencies in the production of these complications is convincingly shown by the rapid response to treatment with the B₂-group of vitamins.

Though few serious toxic reactions appear to have occurred during isoniazid therapy, there are now well-documented reports of less serious effects, including vitamin deficiencies. It would seem important to bear these in mind, not least because

isoniazid has been advocated for other conditions—for example, anxiety and depression (Salzer and Lurie, 1953).

I would like to thank Dr. S. Smith for his help and advice in the original assessment of this case.

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Unusual Explosion During Electrosurgery

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Since electrosurgical apparatus has come into general use many reports have appeared in the literature of explosions which have occurred during its use (Galley, 1955; Zimmerman, 1959; Woodward, 1961). Practically all these reports related to large-bowel surgery and most of the explosions have occurred during attempts at diathermy treatment of rectal polyps. No previous case has been reported of an explosion during an operation on the stomach, and so the following unusual case is recorded.

CASE REPORT

A woman aged 78 was admitted as an emergency on 9 August 1963 with persistent vomiting. The relevant past history was that in August 1962 she had been admitted with obstructive jaundice due to carcinoma of the head of the pancreas, and a cholecystoduodenostomy had been performed. She was well until March 1963, when her condition started to deteriorate, with attacks of vomiting and intermittent cramp-like epigastric pains.

On examination she was thin and dehydrated. The abdomen was markedly distended, especially the left side, and a very loud splash could be heard in the epigastrium. Rectal examination was normal. Plain radiographs revealed a large fluid level in the stomach.

Intravenous therapy was started and a wide-bore tube was passed into the stomach, but it repeatedly became blocked by food residue and only 180 ml. of fluid was obtained. The pharynx was anaesthetized with local anaesthetic and the patient was induced with a small dose of thiopentone sodium; an endotracheal tube was passed after giving suxamethonium chloride intravenously. Anaesthesia was maintained with gas and oxygen. At operation an enormously dilated stomach was found to be filling the whole abdomen; the anaesthetist passed a larger tube but was unable to empty the stomach. There was a hard mass 2 in. (5 cm.) in diameter obstructing the duodenum. It was decided to open the stomach and empty it and then perform a gastrojejunostomy. Diathermy was used and a small opening made in the stomach wall; as soon as the mucosa was incised a loud explosion occurred which was heard outside the operating-theatre. The escaping gases had ignited and were burning with an intense blue flame, but with no odour. An attempt was made to extinguish the flame with swabs,

but after about 10 seconds it had ceased. At the same time the anaesthetist, thinking that the explosion might have been due to anaesthetic gases, quickly wheeled his trolley out of the theatre. In retrospect, the explosion could not have been caused by the gases he was using (oxygen, nitrous oxide, and halothane, with intermittent suxamethonium chloride). The stomach was then emptied and a gastrojejunostomy performed. The patient made an uneventful recovery.

COMMENT

To produce an explosion the presence of a combustible gas, the presence of oxygen, and a flame or spark to ignite the mixture are necessary. Gas in the alimentary tract may be caused by digestive processes, bacterial fermentation, diffusion from the blood-stream, or it may be swallowed. The diathermy itself causes gas to be formed in the tissues when it is used. The combustible gases commonly present in the bowel are methane and hydrogen, and it is thought that in this case the explosion was due to the ignition of a large volume of methane gas and air, producing a loud explosion and an intense blue flame. As a result of pyloric stenosis air, food, and fluid are retained in the stomach and gases are formed by fermentation caused by the presence of yeasts and sarcinae. Cases are on record of explosions occurring as a result of ignition of eructated gas.

Regarding the prevention of explosions, the best method appears to be the use of a non-inflammable gas, such as carbon dioxide, to dilute and replace inflammable gases (Becker, 1953; Levy, 1954). This is said to be simply and effectively achieved by using a carbon-dioxide tank with a reducing valve and feeding the gas along the instrument in a steady stream (usually along the suction tube) at a rate of 2 litres per minute.

I wish to thank Mr. Conrad Latto for permission to publish this case.

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