This pain is commonly felt over the sacro-iliac joints, but I would again emphasize that it is not a deep pain, and a little practice will easily enable us to discriminate between this and the deep tenderness associated with pain on lateral compression of the pelvis which is characteristic of sacro-iliac disabilities. It would seem that by calling attention to such a multiplicity of possible causes of lumbo-sacral backache I have but added to the difficulties of the subject, but these cases are very trying and often the trouble is of very long duration. By realizing the possible causes we may often by systematic examination and exclusion reach the correct solution at once, or, even if we do not do so, we may appreciate the fact that the pain is due to several of these causes combined in a vicious circle, and we may attack the different parts of that circle seriatim and achieve a cure.

To summarize briefly: in examining a case of lumbo-sacral backache first exclude gross disease, injury, and arthritis, and have a skiagram taken. Then look for outside mechanical causes and outside causes of overstrain of the nervous system. Finally, remember the paramount importance of the sympathetic system and seek for referred pain.

Treatment has been briefly indicated in each case, but the value of mobilization in suitable cases must be remembered, and this valuable therapeutic measure should not be relegated to outsiders.

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ACUTE DIABETES FOLLOWING MUMPS.

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THE occurrence of pancreatitis as a complication in the course of an attack of mumps is well known, and has frequently been described. Farnam¹ in 1922 collected 119 such cases from the literature, and added one of her own, in which laparotomy was performed. She summarizes the case records thus:

"An acute abdominal condition, probably pancreatitis, is sometimes associated with epidemic parotitis. It occurs more often in boys and young men than in other classes of the population; it usually follows, but may precede, the parotitis, or may be the only manifestation of the disease. It is characterized by intense epigastric pain, often vomiting, occasionally diarrhoea or constipation, and a slight rise in temperature. A mass may sometimes be felt in the epigastrium. It usually runs a short benign course, and has not been known to affect the internal secretion of the pancreas."

All these 119 patients, with one exception, recovered. It may be stated that the only cases in which the pancreas has actually been seen at this stage are Farnam's (at operation) and Lemoine and Lapasset's² (*post mortem*). In the former case the pancreas was found to be red and tense, with three probable areas of fat necrosis, and the impression gained was one of acute pancreatitis.

Lemoine and Lapasset's case was that of an Algerian soldier who was admitted to hospital with mumps on October 2nd, 1902. The attack was at first simple, but on the tenth day there occurred shivering with high fever, and swelling of the testicle. By the fourteenth day the temperature had fallen to normal, and the patient seemed to be well enough for discharge from hospital. Next day, however, he complained of having slept badly, and had vomited. The temperature was normal, but there was epigastric tenderness and the spleen was palpable. Jaundice and more vomiting followed, and he died on October 18th, after an attack of haematemesis. At the *post-mortem* examination the gall bladder was found to be swollen and oedematous, apparently from pressure by an enlarged gland on the common duct. The pancreas had almost tripled its normal weight (190 grams), and was oedematous and congested, with swelling of the lymph glands round about. Histological examination showed a general increase in size of the acini and epithelial cells, with diminution in size of the islets of Langerhans, through pressure of the swollen ducts.

Although symptoms of pancreatitis are thus relatively common in the course of mumps, glycosuria or diabetes has

seldom been described, and Garrod³ in his Lettsomian lectures (1912) commented on the rarity of glycosuria in this connexion. I have been able to find records of only three cases in the literature, with a doubtful fourth, and I add a brief description of a fifth case, a very acute one, which recently came under my own observation.

1. Harris⁴ (1899) describes the case of a farmer, aged 42, who three years previously had had an attack of mumps. A month after recovery from this attack polyuria had set in; thirst, hunger, and loss of weight followed, and these symptoms had continued with gradually increasing severity. When Harris saw him he was emaciated, having lost 30 lb. in weight, and the knee-jerks were absent; 6,440 c.cm. of urine, containing 4.6 per cent. of glucose, were passed in the day.

2. Barbieri⁵ (1903) mentions the case of a boy, aged 6, who contracted mumps during an epidemic. Six days after the onset of the symptoms he complained of continuous pain above the umbilicus which radiated round the right side to the right lumbar region. The pain was attributed by the parents to worms, and the child was dosed with calomel and santalin. The abdominal pain continued, and next day there were also vomiting and diarrhoea. After two days of this the boy developed a voracious appetite and great thirst, but everything he ate was vomited an hour later. He drank 2 litres of water in a day. Barbieri was now called to see the patient, and found that he had slight epigastric tenderness, while the faeces under the microscope showed many droplets of fat. The urine had a specific gravity of 1034 and contained sugar; 2,400 c.cm. were passed in twenty-four hours. The symptoms subsided gradually, and after fifteen days had disappeared. By that time the urine was sugar-free, the specific gravity being 1015 and the daily amount no more than 600 c.cm.

3. Gilhespy and Holden⁶ (1917) record the case of a lad, aged 16, who in May, 1916, had an attack of mumps, without testicular or abdominal symptoms. On the third or fourth day of this illness the patient became very thirsty, and began to pass a large quantity of urine. When seen in hospital he showed pronounced signs of diabetes mellitus, with sugar and acetone bodies in the urine. Tuberculosis of the lungs also was present, and he died in five months. The authors mention that at the *post-mortem* examination some islets in the tail of the pancreas were found to show hyaline degeneration.

4. The case which I have classed as doubtful was described by Routh⁷ in 1912. Here a man, aged 58, on April 13th developed a right-sided parotid swelling which was attributed to a chill experienced five days before. Two superficial ulcers were present on the right side of the tongue. Some pyrexia followed and extension of the swelling to the submaxillary region. By April 28th the swelling was more severe, and incision under an anaesthetic was contemplated. On examination the urine was found to contain sugar and aceto-acetic acid (specific gravity 1038). By May 1st the aceto-acetic acid had disappeared, and on May 2nd the urine was free from sugar. This case would seem not to have been one of mumps, but rather one in which glycosuria was associated with septic parotitis.

I shall now describe a case in which diabetes followed mumps and ran a rapid course to death, the patient coming under my care in the last stage.

5. E. A., a girl aged 8, was admitted to Dundee Royal Infirmary on December 2nd, 1923, in coma. The history was that five weeks previously she had developed mumps, which ran an ordinary course, and in which there had been no complaint of abdominal pain. Two weeks after the attack of mumps came on she began to pass a large quantity of urine, and had to get up sometimes eight times in the course of a night to empty the bladder. She complained of great thirst, and her appetite increased. After a week the polyuria lessened, but the other symptoms continued unabated. There was also pronounced constipation. A few days before her admission to hospital she became confused mentally, and on November 30th she failed to recognize her friends. She went into coma on December 1st, and when brought to hospital on December 2nd was deeply unconscious. A specimen of urine obtained by catheterization showed 8 per cent. of glucose and much aceto-acetic acid, and the breath had a strong smell of acetone. In spite of treatment by insulin she died within thirty-six hours, without recovering consciousness.

It is interesting to note that although abdominal pain is present in the common type of pancreatitis which complicates mumps, it was absent in Gilhespy and Holden's case, in that which I have described, and it is not referred to as having occurred in Harris's, the only three cases of mumps among those recorded in which true diabetes seems to have developed.

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