

PATHOPHYSIOLOGICAL BASIS OF COMMON ABDOMINAL SYMPT

PATHOPHYSIOLOGICAL BASIS OF COMMON ABDOMINAL SYMPTOMS AND SIGNS

The abdominal wall and parietal peritoneum are innervated by the somatic nervous system, whereas the abdominal organs and visceral peritoneum are innervated by the autonomic nervous system. Therefore pain may change in its character and distribution as the underlying pathology evolves. Visceral pain from the foregut is generally felt in the epigastrium, in the periumbilical area from the midgut and in the suprapubic area from the hindgut. The skin and the muscles of the abdominal wall are supplied by the lateral and anterior cutaneous branches of the lower six intercostal nerves, the iliohypogastric nerve and the John Benjamin Murphy, 1857–1916, Professor of Surgery, Northwestern University, Chicago, IL, USA, described his sign in 1903. He was the son of immigrants fleeing the potato famine in Ireland. He was known as the 'stormy petrel' of American surgery. - er the ilioinguinal nerve (Figure 63.1). The dermatome levels of the xiphoid process, umbilicus and pubis are T7, T10 and T12, respectively. The parietal peritoneum is supplied segmentally by the same nerves that innervate the overlying muscles. The central part of the diaphragmatic peritoneum is supplied by the phrenic nerve (C4); therefore, pain arising in this region is referred to the tip of the shoulder as it has the same segmental supply. The peripheral rim of the diaphragmatic peritoneum is supplied by the intercostal nerves. The obturator nerve is the principal nerve supply of the pelvic parietal peritoneum. Pain from the viscera is principally due to ischaemia, muscle spasm or stretching of the visceral peritoneum. Unlike somatic pain, autonomic pain is deep and poorly localised. This pain is transmitted via sympathetic fibres and so is referred to the appropriate somatic distribution of that nerve root from T1 to L2. However, when an inflamed organ touches the parietal peritoneum, the pain becomes sharp and localises to the appropriate segmental dermatome of the abdominal wall. Referred pain due to irritation of the undersurface of the diaphragm by blood from a ruptured spleen can be felt at the left shoulder. Pain arising from the parietal peritoneum may radiate to the back or the front along the appropriate dermatome. This referral pattern is classically seen in acute cholecystitis when an inflamed gallbladder touches the parietal peritoneum. Pain then radiates round to the back along the involved dermatome. The overlying muscle and skin are supplied by the same nerve root, so, when the patient takes a deep breath, the tenderness in the right subcostal region is markedly increased, causing the patient to stop breathing; this is Murphy's sign. In children with abdominal pain who hold their right hip in a flexed position - to obtain relief from the pain, one should suspect retrocaecal appendicitis causing irritation of the psoas muscle. -

T7 T10 Iliohypogastric nerve – L1 T12 Ilioinguinal nerve – L1 L1 Figure 63.1 Distribution of the anterior abdominal wall dermatome and nerves.

Nerves responsible for abdominal pain /uni25CF /uni25CF /uni25CF /uni25CF Summary box 63.5
Specific characteristics of abdominal pain /uni25CF /uni25CF /uni25CF /uni25CF

Abdominal wall and parietal peritoneum are supplied by the somatic nerves Abdominal organs and the visceral peritoneum are supplied by the autonomic nervous system Skin, muscles and parietal peritoneum are supplied by the iliohypogastric and ilioinguinal nerves and the lower six intercostal nerves Afferent pain /f_i bres from the abdominal organs and visceral peritoneum travel with sympathetic nerves Visceral pain arises from ischaemia, muscle spasm or stretching of the visceral peritoneum Autonomic pain, deep and poorly localised, is referred to the equivalent somatic distribution of that nerve root from T1 to L2 When an in /f_I amed organ touches the parietal peritoneum, pain is then localised to the segmental dermatome of the abdominal wall The pain in the parietal peritoneum may radiate to back or front along the dermatome

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