

## assessing the gastrointestinal (GI) tract in older people: 2. The lower GI tract

The previous article in this series (Watson 2000a) considered the GI tract from the mouth to the stomach: the upper GI tract. Here, Roger Watson considers the lower GI tract from the duodenum to the rectum.

The mouth and the stomach are responsible for initiating the physical and chemical breakdown of food and the remainder of the GI tract completes the process of digestion, absorbs nutrients into the blood stream and excretes waste products.

Specifically, the small intestine is responsible for completing the digestion of carbohydrate and protein which were initiated, respectively, in the mouth and stomach in addition to digesting fat – which is uniquely digested in the small intestine. In the small intestine the products of the digestion of carbohydrates, proteins and fats: monosaccharides (glucose, fructose and galactose), amino acids and triglycerides respectively, are absorbed into the bloodstream for delivery to other organs of the body, principally the liver, where they can be further metabolised (Watson 2000b).

Monosaccharides and amino acids are absorbed directly into the bloodstream whereas triglycerides are absorbed into the lymphatic system and delivered via the lymph which is returned to the bloodstream from the peripheral tissues. The contents of the small intestine are mixed by segmentation and propelled by peristalsis to the large intestine.

The large intestine acts to store and transport faeces and removes the majority of the water from foodstuffs. By the action of commensal bacteria, some foodstuffs which are not digested higher up in the GI tract are broken down. Modified peristaltic movement takes place in the large intestine to propel food towards the rectum which, when full, stimulates the body to undergo the process of defaecation whereby the contents of the rectum are expelled via the anus. The anus is kept closed by two rings of muscle called sphincters: an inner smooth muscle sphincter which is involuntary and an outer sphincter which is composed of skeletal muscle and which is under voluntary control. In short, while the process involves a combination of reflex and voluntary actions, the urge to defaecate can be controlled within reasonable limits.

When food leaves the stomach it enters the duodenum which is a very important region of the GI tract. The duodenum receives food from the stomach, neutralises it by the presence of alkaline sodium bicarbonate, completes the digestion of carbohydrate and protein, initiates the digestion of fats by the secretion of a range of digestive enzymes and produces hormones which provide feedback to the stomach both to stimulate and decrease its digestive actions. Ultimately the stomach is emptied and digestion is brought to completion. The duodenum is also where the fats come into contact with bile – a substance which emulsifies the fats: produces smaller droplets with a larger surface

area thus rendering fats more susceptible to the action of lipases – the enzymes which digest fat.

The duodenum receives digestive enzymes and sodium bicarbonate (pancreatic juices) from the pancreas and bile, which is made in the liver, from the gall bladder. The pancreatic juices and the bile enter the duodenum at the same point – the ampulla of Vater which is kept closed, until the stimulus to open is provided by hormones released by the duodenum, by the sphincter of Oddi. The lower GI tract in the older person, therefore, requires consideration of the small intestine, the liver and gall bladder, the pancreas and the large intestine.

### ageing and the lower GI tract

The effects of ageing on the lower GI tract may be summarised as atrophy resulting in decreased motility and decreased absorption (Christiansen and Grzybowski 1993). In addition, the liver which is closely associated with the lower GI tract reduces in size. In common with many other systems of the body reviewed in this series this has no significance in health – there is ample capacity in the GI tract to allow normal digestion, absorption and defaecation and, despite the higher incidence of certain problems in the lower GI tract, it is rarely possible to ascribe these solely to the process of ageing.

A common feature of the colon of older people are diverticuli: pockets which form in the intestine, possibly due to reduced motility but also, perhaps, due to a low fibre diet, where intestinal faeces may be stored instead of passing along the GI tract. Diverticuli are not normally a problem but their contents can become infected which can lead to bleeding which is noticed by blood being passed in the faeces. The incidence of gall stones: crystals of cholesterol and bile salts, being formed in the gall bladder increases with age (Morris 1998) but this is only a problem if the person experiences pain, the outlet to the gall bladder becomes blocked leading to jaundice or the gall bladder becomes infected (cholecystitis).

Appendicitis does not increase with age but, as discussed in a previous article, two of the cardinal symptoms: pain and temperature, may be masked in many older people making diagnosis more difficult (Hall *et al* 1993). The incidence of pancreatic cancer increases with age.

### constipation

It is a widely held view that constipation is more common in old age, this view is held by health professionals and the general public, including older people (Ebersole and Hess 1990). ▶

**Table 1****Some causes of constipation related to ageing****Delay in transit through colon:**

- low dietary fibre
- immobility
- Parkinson's disease
- drug-induced (eg opiate, anticholinergic)

**Difficulty with evacuation:**

- hard faeces
- secondary, eg, to haemorrhoids
- general debility
- confusion and dementia

Adapted from Norton (1999)

Constipation has many causes (Table 1). However, as mentioned above, there is no particular aspect of the process of ageing which leads to constipation (Clinch and Hilton 1998). Nevertheless, older people report this more frequently than their younger counterparts and the problem has to be taken seriously. It is certainly the case – for reasons that are not fully understood – that many older people become ‘obsessed’ by their bowel habits and become unduly worried if they do not have a bowel movement every day. It is demonstrable – possibly as a result of this – that older people are major consumers of laxative medications (Harari *et al* 1993). There is, in fact, no figure that can be produced for normal bowel habits. The range of frequency which individuals consider normal for themselves ranges from three times daily to three times weekly (Koch 1998).

**cancer of the colon**

Colorectal cancer is higher in those over 60 years of age (Dew 1999). Those presenting with this condition typically complain of a change in bowel habit often accompanied by rectal bleed-

**Table 2****Assessment of the lower GI tract****History**

- pain (type location, duration, intensity)
- jaundice
- bowel habits (frequency, regularity)
- use of Laxatives
- flatulence
- stools (colour and consistency eg presence of blood or black stools)

**Physical assessment**

- inspection for lesions, masses, tautness of abdomen
- presence of bowel sounds
- palpation for tenderness of enlarged internal organs

Adapted from Matteson (1988)

ing and, it is often the case that, by the time symptoms have been noticed and reported that the disease has spread elsewhere in the abdomen.

**assessment of the lower GI tract**

The lower GI tract cannot really be assessed separately from the upper GI tract and, in taking a history from an older person, aspects of both the upper and lower GI tract should be considered together. Some of the domains of assessment which were raised in the previous article in the series (Watson 2000a), such as the presence of nausea and vomiting, are also relevant to the lower GI tract. Table 2 outlines the main areas of assessment of the lower GI tract (Matteson 1998). Jaundice, which may indicate problems with the liver or the head of the pancreas, will definitely require further medical and possibly surgical investigation. Urinalysis would normally be carried out as part of any assessment procedure and the nurse should be careful to observe and report accurately on the presence of bile products in the urine.

Otherwise, the nurse can gain a great deal of information from an older person which will provide a picture of the function of the colon. Change in bowel habit, pain, masses, bleeding and discomfort from flatulence can be indicators of a wide range of conditions from the relatively innocuous, such as diverticulitis, to the more serious cancer of the colon. The baseline upon which any assessment of the lower GI tract and especially bowel habit should be built is that change in bowel habit and, in particular, bleeding is not a normal part of the ageing process. These things are always worth reporting and investigating.

**Roger Watson BSc PhD RGN CBiol MIBiol, is Professor of Nursing, University of Hull**

**References**

- Christiansen JL, Grzybowski JM (1993) *Biology of Aging*. St Louis. Mosby.
- Clinch DP, Hilton DA (1998) Constipation. In: Pathy MSJ, *Principles and Practice of Geriatric Medicine 3rd edition*. London. Wiley 437-442.
- Dew MJ (1999) Diseases of the colon and rectum. In: Pathy MSJ, *Principles and Practice of Geriatric Medicine 3rd edition*. London. Wiley 395-405.
- Ebersole P, Hess P (1990) *Toward Healthy Aging*. St Louis. Mosby.
- Hall MRP, MacLellan WJ, Lye MDW (1993) *Medical Care of the Elderly*. London. Wiley.
- Harari B, Gurwitz JH, Minaker KL (1993) Constipation in the elderly. *Journal of the American Geriatrics Society*, 41, 1130-1140.
- Koch T (2000) Older people and laxative use: literature review and pilot study report. *Journal of Clinical Nursing*, 9, 516-525.
- Matteson MA (1988) Age-related changes in the gastrointestinal system. In: Matteson MA, McConnell AS, *Gerontological Nursing*. New York. WB Saunders 264-289.
- Morris JS (1998) Diseases of the gall-bladder and bile ducts. In: Pathy MSJ, *Principles and Practice of Geriatric Medicine 3rd edition*. London. Wiley 419-436.
- Norton C (1999) Eliminating. In: Redfern SJ, Ross FM *Nursing Older People. 3rd Edition*. Edinburgh. Churchill Livingstone 395-412.
- Watson R (2000a) Assessing gastrointestinal (GI) tract functioning in older people. *Nursing Older People*, 12, 2, 27-28.
- Watson R (2000b) *Anatomy and Physiology for Nurses 11th edition*. London. Bailliere Tindall.