

education

FROM THE JOURNALS Edited highlights of weekly research reviews on <https://bit.ly/2PLtl8>

Vitamin D for gastrointestinal cancers

A Japanese group randomised 417 patients with a digestive tract cancer (stage I, II, or III) to oral vitamin D (2000 units per day) or placebo at their first postoperative clinic visit in a double blind



trial. In both groups there were similar rates of overall survival, rates of relapse, and rates of relapse-free survival (the primary outcome). This trial's data do not corroborate observational findings that vitamin D supplementation might be protective against cancer.

• *JAMA* doi:10.1001/jama.2019.2210

Function matters in middle age

These US authors followed more than 5000 people initially aged 50-56 years, comparing those who developed functional impairment (difficulties in performing daily activities) before age 64 with those who did not develop functional impairment before age 64. Those who developed functional impairment were more likely to be hospitalised, admitted to a nursing home, or die despite adjustment for risk factors such as chronic illness. These observational data are an important signal that functional impairment is clinically significant, although we are left with the chicken versus egg question. Does functional impairment give way to disease or does an underlying disease process give way to functional impairment? Either way, functional impairment looks like a good target for healthcare intervention.

• *JAMA Intern Med* doi:10.1001/jamainternmed.2019.0008

Dementia drug disappoints

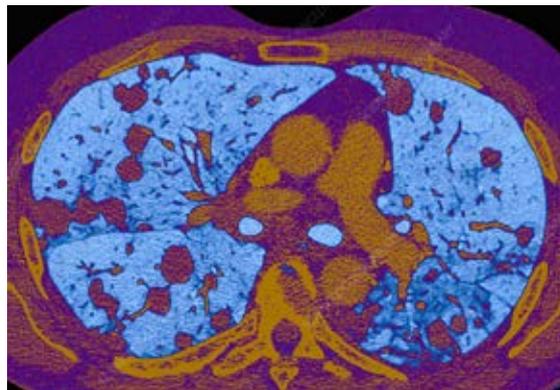
Verubecestat is an oral drug developed to block amyloid beta production to prevent progression of dementia due to Alzheimer's disease. It had failed to show benefit in mild to moderate dementia, but the developers thought that perhaps this was too late in the disease process for the intervention. This time, the authors recruited people with memory impairment who did not meet the definition of dementia in a large, double blind, randomised, placebo controlled trial of two doses of the drug. The trial was terminated after enrolment (more than 1400 patients) due to lack of benefit on cognitive and daily function. In fact, the higher dose group had worse cognitive outcomes than the placebo group. Back to the drawing board then.

• *N Engl J Med* doi:10.1056/NEJMoa1812840

Metastases meet their match

For many of us, being told a cancer has spread or metastasised is synonymous with being told that it is "incurable." In this paper, the authors wanted to gather evidence on the oligometastatic paradigm, which is the idea that cancer with a limited number of metastases could be cured if all the lesions are eradicated. This international multicentre trial randomised 99 patients with between one and five metastases whose primary tumour had already been "controlled." They found impressive survival benefits (13 months longer) for those randomised to ablative radiotherapy compared with those randomised to standard care. This is good news for patients like those in the studied population, although 4.5% of patients in the radiotherapy group had treatment-related death, and toxicity was worse.

• *Lancet* doi:10.1016/S0140-6736(18)32487-5



Progressive multifocal leukoencephalopathy

Progressive multifocal leukoencephalopathy (PML) is a rare but life threatening brain infection. It tends to occur in those who are immunosuppressed, but they can get better if the immune system can be restored. This paper is a report on some patients with PML who consented to receive off-label pembrolizumab (an immune checkpoint inhibitor used in cancer treatment) but, confusingly, not as part of a trial but on what the authors describe as "a compassionate-use basis." Trying to give the paper the benefit of the doubt, I read on. In the supplementary appendices, for the eight included patients, I found 16 references to "improvement" and five references to "stabilisation"—always after the administration of the pembrolizumab treatment—and a vague mention of control patients. In conclusion, this is an interesting case series of eight patients unjustifiably presented as a possible breakthrough treatment.

• *N Engl J Med* doi:10.1056/NEJMoa1815039

Alex Nowbar is a clinical research fellow at Imperial College London

Is surgery effective in patients with femoroacetabular impingement syndrome?

Ruth SF Richardson,¹ Karen Lothe,² Seb Sturridge¹

¹Frimley Park Hospital, Surrey

²Upper Gordon Road Surgery, Surrey

Correspondence to: R Richardson rsfrichardson@gmail.com

Femoroacetabular impingement syndrome (FAIS) describes motion related hip pain, which is caused by premature bony contact between deformities at the femoral neck and/or the acetabular rim¹⁻³ (fig 1). Young, active adults are commonly affected. A prospective study in the Netherlands found that 17% of adults presenting to primary care with hip/groin pain in a year (84 adults in all) were subsequently diagnosed with FAIS on radiological imaging,⁴ and a further 30% had a high clinical suspicion. Impingement can damage the joint cartilage over time and lead to osteoarthritis.²⁻⁶

Treatment includes conservative care with analgesics, lifestyle and activity modification, and physiotherapy, or surgery. Attempts to refine diagnostic and treatment criteria have been made⁷; however, doubt remains about subcategories of FAIS and subgroup outcomes.^{8,9} Yet, the volume of arthroscopic hip surgery has grown exponentially.¹⁰ FAIS is the primary indication for this surgery.¹¹ Within the past decade, the number of hip arthroscopies performed in the NHS has increased 10-fold. Almost 4000 surgeries are predicted annually by 2023.¹⁰ Controversy exists about how surgery compares with non-operative treatment for FAIS¹² and it remains unclear whether surgery can delay early joint degeneration, offsetting the need for future hip replacement.

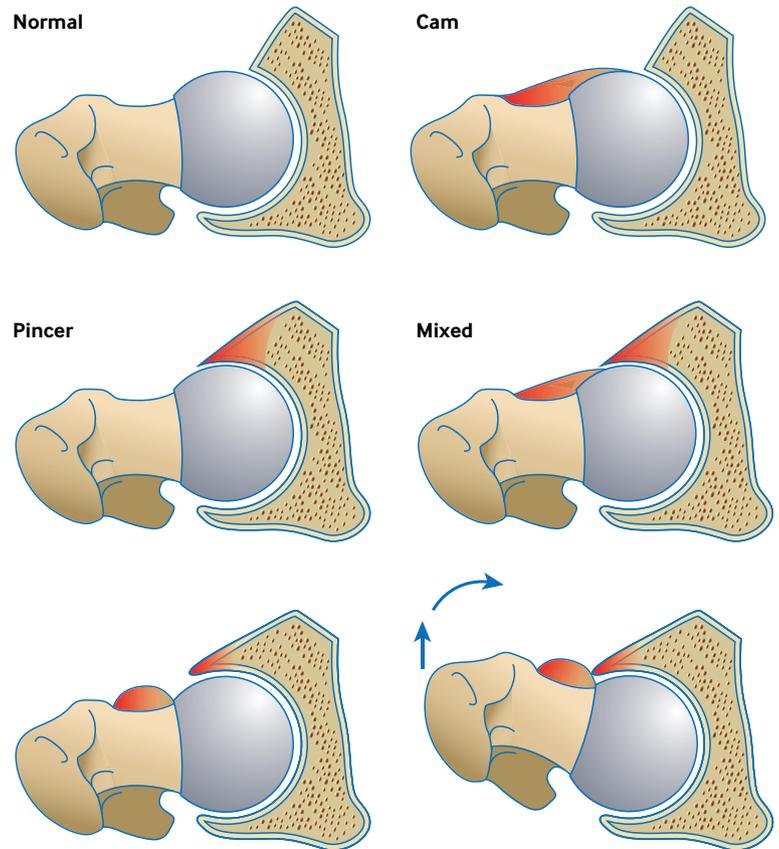


Fig 1 | A bony enlargement on the anterior femoral neck (cam impingement), and/or at the acetabular rim (pincer impingement), causes premature contact especially during flexion and internal rotation. This repetitive trauma damages the labrum and the joint cartilage

WHAT YOU NEED TO KNOW

- Consider femoroacetabular impingement syndrome (FAIS) as a possible diagnosis in young adults with hip or groin pain and features suggestive of impingement on imaging
- Trials suggest improved pain and functional outcomes with arthroscopic surgery but there is uncertainty about the extent of improvement compared with physiotherapy and the long term effect of surgery
- Discuss the options of physiotherapy and activity modification as alternatives to surgery. Offer referral to an orthopaedic surgeon to discuss the indication for surgery if symptoms do not improve

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

We consulted a patient with femoroacetabular impingement, who had undergone both physiotherapy and hip arthroscopy, about the scope and focus of this article before drafting. The patient emphasised the benefit of both treatments and the importance of informed patient choice, which we have included in the box *What patients need to know*. She also reviewed and approved the draft manuscript. We are grateful for her input.

SEARCH STRATEGY

We searched PubMed and the Cochrane Library using the terms “femoroacetabular impingement,” or “hip impingement,” or “hip arthroscopy.” We prioritised studies comparing arthroscopic surgical treatment with conservative management in patients with symptomatic FAIS. We included studies involving adults from 1990 to 2018. We also reviewed the most recent Non-Arthroplasty Hip Registry report, for nationwide information on current trends in FAIS surgery. We cross referenced bibliographies.

What is the evidence of uncertainty?

We identified six systematic reviews investigating the management of FAIS and three randomised controlled trials comparing arthroscopic hip surgery with conservative management (table, see [bmj.com](#)). The outcomes included patient reported outcome measurements (PROMs), which is a composite score derived from a set of questions on hip related quality of life. Questions cover pain and function in a range of activities, such as putting on socks, getting out of a car, participating in sports, and sex. Other outcome measures considered include complications, re-operation, return to sport, and cost analysis.

Short term outcomes

The most recent systematic review (29 clinical studies, 1911 patients) found a statistically significant improvement across all PROMs following hip arthroscopy for FAIS,¹⁸ echoing the conclusions of previous systematic reviews.¹⁶⁻²⁰ Of those patients, 1.7% experienced complications. Nearly 88% of patients could return to sport following surgery. The re-operation rate was 5.5%, and 77% of re-operated patients went on to have total hip replacement.¹⁸

All these systematic reviews relied on mostly low quality evidence from case series and cohort studies.¹⁶⁻²⁰ A Cochrane Review from 2014 confirmed that no randomised controlled trials comparing arthroscopic hip surgery with conservative management had been published.²¹

Over the past year, three randomised controlled studies have been published. Two well conducted trials report greater improvement in hip related quality of life at 8 months to one year with arthroscopy as compared with physiotherapy.^{13 15} In another trial conducted in a military hospital, no difference was found between the physiotherapy and the surgery arms of the trial. However, 70% of patients in the physiotherapy arm went on to have hip arthroscopy within the follow-up period, reducing the power of the study.¹⁴ These findings may not be generalisable.

There is great heterogeneity across the literature in outcome measurements, particularly the variety of PROMs used, which adds to the uncertainty.

Long term outcomes

High quality, long term trials on mitigation of risk of osteoarthritis with surgery are lacking. A systematic review of medium and long term outcomes after hip arthroscopy (seven studies, 1484 hips) for FAIS found that 10% of joints required a total hip replacement within eight years of follow-up.¹⁷ Conversion to hip replacement is a surrogate marker for developing osteoarthritis but is not accurate. Increasing age, degenerative joint disease, and female sex were risk factors. The evidence is of low quality and leaves uncertainty regarding the development of osteoarthritis in patients with and without surgery.

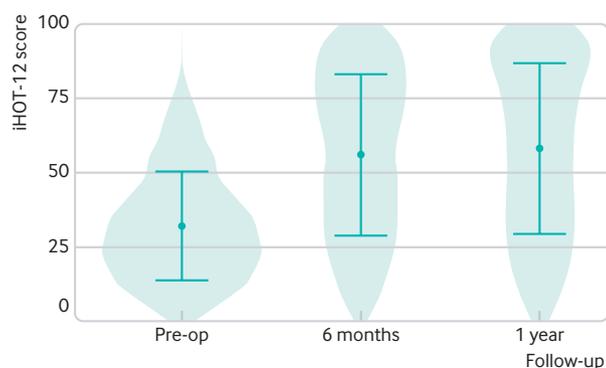


Fig 2 | Graph taken from the NAHR 2nd Annual Report 2017. Scores show statistically significant improvement in the iHOT-12 at six months (n=661, $P<0.0001$) and 12 months (n=528, $P<0.0001$) postoperatively compared to preoperative baseline (paired t-test)¹¹

Is ongoing research likely to provide relevant evidence?

Further surgical trials of treatment for FAIS are under way and will add to the evidence on the true efficacy of treatment of hip arthroscopy in FAIS. It will be several years before research currently in progress can indicate the longer term impact on osteoarthritis (table 2, see [bmj.com](#)). Our analysis of the trials included a search of ISRCTN, [clinicaltrials.gov](#), and ANZCTR using the terms “hip impingement” or “femoroacetabular impingement”. Bibliographies were cross referenced.

The Non-Arthroplasty Hip Registry collects surgical and PROMs data from numerous orthopaedic interventions, including arthroscopic procedures for FAIS (fig 2). Although this registry is still in its infancy, it intends to follow the “lifespan” of the hips entered into its database and may be able to link to other registries, such as the National Joint Registry. This would help identify the long term survivorship of hips undergoing arthroscopy for FAIS.¹¹



What should we do in the light of the uncertainty?

Carefully assess young adults presenting with hip pain to rule out important differentials before considering treatment for FAIS.²⁵ Only patients with bothersome symptoms may require treatment. Asymptomatic patients with radiographic features of impingement do not require treatment.

Discuss the different treatment options. Advise the patient regarding weight loss (where applicable), activity modification, and non-steroidal anti-inflammatory drugs (where safe) for pain relief as recommended by National Institute for Health and Care Excellence (NICE) guidelines.²⁶ Suggest avoiding situations that precipitate symptoms, such as high impact or repetitive activities, or terminal ranges of movement under load. Physiotherapy focusing on movement patterns, improving muscle control, and strengthening exercises around the hip can reduce impingement and improve patient outcomes.¹³

In patients with no improvement, offer referral to an orthopaedic surgeon specialising in young adult hip conditions and arthroscopy for further assessment and evaluation for arthroscopic surgery. Inform patients that the evidence base for surgery is still evolving. So far, studies have shown an improvement in patient reported outcomes after surgery. However, the procedure typically

requires two weeks off work, weeks to months off sports, and it may take up to a year for patients to feel a benefit from surgery. They may possibly see no benefit from surgery, or they may be worse off as a result.

It can be difficult to translate PROMs research for patients who want to understand the evidence base for treatment. It may be worth explaining that, in the recent FAIT trial,¹⁵ 70% of patients who had arthroscopic surgery showed improvement from their baseline scores (95% confidence interval 61% to 79%). In the physiotherapy arm of the trial, 50% of patients showed an improvement from their baseline scores (95% confidence interval 40% to 60%). This suggests that even though surgery has shown better results than physiotherapy, one in three patients do not improve after hip arthroscopy.

Inform patients that there remains uncertainty about the rate of progression to arthritis and there is no solid evidence yet that surgery for FAIS will slow the development of any osteoarthritis in their hip joint.

Competing interests: *The BMJ* has judged that there are no disqualifying financial ties to commercial companies.

The authors declare the following other interests: SS is part of the UK FASHIoN Study Group and contributor to the NAHR database.

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Find the full version with references at <http://dx.doi.org/10.1136/bmj.11359>

RECOMMENDATIONS FOR FURTHER RESEARCH

Long term follow-up data from trials to establish whether hip arthroscopy for FAIS delays the development of osteoarthritis

Evaluation of cost effectiveness of hip arthroscopy to inform the debate about a shift towards surgical management of FAIS

Most effective physiotherapy intervention to augment surgical management both pre and postoperatively

EDUCATION INTO PRACTICE

- How has reading this article informed your understanding of femoroacetabular impingement syndrome and the treatment options available?
- How will you explain the pathology of hip impingement and the role of hip arthroscopy to patients?

WHAT PATIENTS NEED TO KNOW

- Femoroacetabular impingement presents with pain in the hip or groin, and is diagnosed based on clinical examination and imaging
- Your doctor will advise weight loss and activity modification and prescribe analgesics for pain relief. Physiotherapy is also effective in reducing pain and improving function
- Arthroscopic surgeries for hip impingement are on the increase. Recent trials show some improvement in pain and function with surgery; however that improvement may not take the patient back to full function, sport, or work. Some patients do not see an improvement after arthroscopy
- It may take many months or even a year for recovery and to feel the full effect of the surgery
- The procedure is usually done as a day case and patients will mobilise home the same day (crutches used for 2-3 days until postoperative pain has subsided). We generally recommend two weeks off work for postoperative recovery
- Surgery carries associated risks and complications, which do not apply to physiotherapy. Every effort should be made to rehabilitate the hip, when possible, without recourse to surgery
- Impingement can damage joint cartilage and lead to osteoarthritis of the hip over time, but there is no evidence that surgery can prevent this

ADDITIONAL RESOURCES

Video describing FAIS.

https://www.youtube.com/watch?v=A-_r8FyJwTQ

NICE patient information leaflet on surgery for FAIS.

<https://www.nice.org.uk/guidance/ipg408/resources/treating-hip-impingement-syndrome-with-arthroscopic-surgery-pdf-362852749>

Primary care management of chest pain after coronary artery bypass surgery

Damian Gimpel,^{1 2} Raewyn Fisher,³ Zahoor Khan,⁴ David J McCormack^{1 2}

¹Waikato Cardiothoracic Unit, Waikato Hospital, Hamilton, New Zealand

²Faculty of Medical and Health Sciences, The University of Auckland, New Zealand

³Department of Cardiology, Waikato Hospital

⁴General Practice, Roodlane Medical, London

Correspondence to: D J McCormack
david.mccormack@waikatodhb.health.nz



Overview of coronary artery bypass grafting (CABG)

CABG is a surgical procedure in which autologous arterial or venous conduits are harvested in order to bypass atherosclerotic coronary arteries. Traditionally, a midline sternotomy is performed for surgical exposure. The procedure can be performed minimally invasively. The common sources of conduit for CABG include the internal thoracic or mammary artery, the radial artery, and the great saphenous vein. Depending on the extent and anatomical position of the coronary artery disease, a combination of grafting between arterial and venous conduit can be done. The procedure is completed with closure of the sternum with sternal wires, plates, or sutures and closure of the subcutaneous tissue and skin.

Coronary artery bypass grafting (CABG) accounts for over half of all adult cardiac surgeries globally.¹ Over 16 000 operations were performed in the UK in 2015.² Recurrent or chronic chest pain after CABG can be extremely worrying for the patient and affect their quality of life.³ In a prospective cohort study (183 patients), a third of patients reported chronic chest pain on movement and 17% reported chest pain at rest at one year after CABG.⁴ This presents a diagnostic challenge in primary care and requires prompt investigation.⁵

This article presents a practical approach for non-specialists to evaluate chest pain in patients after a CABG with a median sternotomy. We focus on chest pain in the medium to long term after surgery, when the patient has been discharged from postoperative services and is under the care of their general practitioner in the community.

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

A patient who had undergone coronary artery bypass surgery reviewed this article for *The BMJ*. He said that patients may be apprehensive about chest pain after surgery and that an algorithm for clinicians on how to identify the cause would be useful. He said it was important to consider anxiety in patients and to address it. As a result, we have expanded our discussion of chronic postoperative pain and management strategies.

WHAT YOU NEED TO KNOW

- Investigate any chest pain after coronary artery bypass grafting by requesting an electrocardiogram, chest xray, and tests such as troponin assay and complete blood count
- Chest pain of sudden onset or of increasing severity may be due to ischaemic heart disease or aortic dissection. Urgently refer the patient to specialist cardiology or emergency services
- Suspect sternal wound infection if the pain is localised to the surgical scar and is accompanied by erythema or discharge at the site, fever, or malaise
- Persistent pain after surgery with normal findings on assessment and investigations may be attributed to musculoskeletal cause or chronic postoperative pain
- For chronic postoperative pain, analgesics for pain relief, patient education and counselling to address lifestyle risk factors, behavioural therapy, and follow-up may be offered

What are possible causes?

Patients may report that their pain that has failed to subside after surgery, has changed in nature, is escalating in severity, or is new in onset. The infographic lists common causes to consider and features that can help in making a diagnosis. Broadly, it is important to distinguish pain of cardiac origin from that related to the surgery, and from pain that is musculoskeletal or chronic in nature.

Coronary artery disease

Ischaemic heart disease after CABG can be due to new coronary artery disease or unsuccessful revascularisation of the CABG. Early graft failure is the major reason for resistant or recurrent chest pain after surgical revascularisation. This can result from acute thrombosis or technical errors during surgery.⁵

Aortic dissection

Aortic dissection after CABG is rare but life threatening. Acute chest pain radiating to the back and increasing in severity should raise suspicion.

Post-cardiac injury syndrome

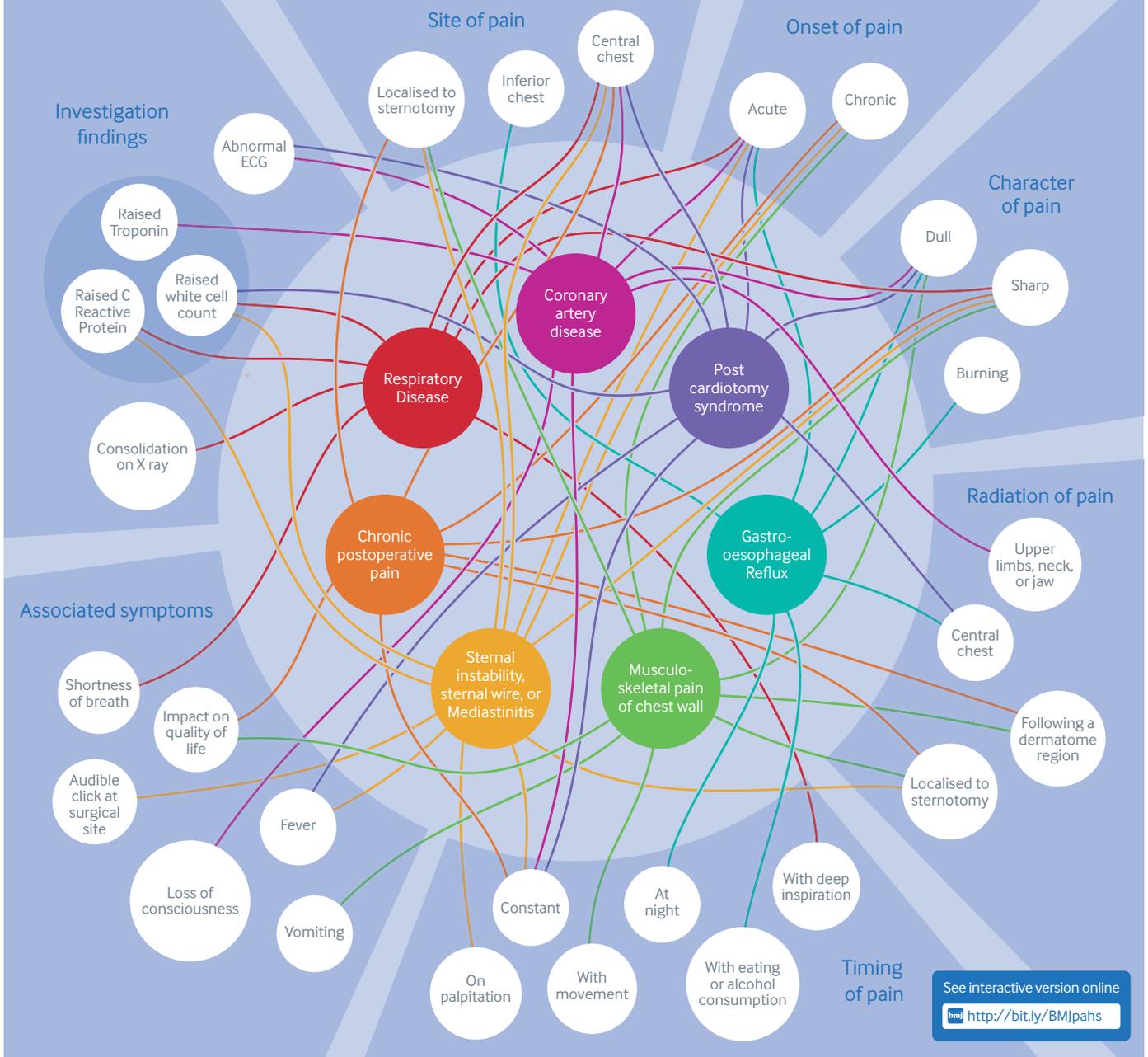
This encompasses inflammatory processes that include post-cardiotomy syndrome, Dressler's pericarditis, and post-cardiac trauma.⁶ At least two of the following five criteria must be present to diagnose post-cardiac injury syndrome:

- Fever without alternative causes
- Pericarditis or pleuritic chest pain that is sharp in nature
- Pericardial or pleural rub
- Pericardial effusion
- Pleural effusion on imaging and a raised C reactive protein level.⁶



Assessment of postoperative chest pain

After coronary artery bypass grafting



Sternal wound infection

This can occur as a complication of sternotomy. According to the Centre for Disease Control guidelines,⁷ it is diagnosed by one or more of the following:

- Isolation of an organism from mediastinal tissue or fluid
- Evidence of mediastinitis at operation
- Presence of chest pain, sternal instability, fever, and purulent discharge from the mediastinum
- A positive blood or tissue culture from the mediastinum.

Chronic postoperative pain

This is usually diagnosed when the patient has persistent pain after surgery and other causes have been excluded.

It is usually localised to the surgical field or has a specific neurological distribution. It is either a continuation of post-surgical pain or develops after an asymptomatic period. Pain can last for months or years and can considerably affect quality of life.⁸

EDUCATION INTO PRACTICE

- What causes will you consider in a patient who has undergone a CABG and who now complains of chest pain or discomfort?
- What findings on assessment would prompt you to refer the patient to specialist cardiology or emergency services?
- In patients with no clear cause of chest pain and normal findings on examination and investigations, how will you discuss chronic postoperative pain and its management?

What to cover on initial assessment

History

Where is the pain localised?

Ask the patient to point to the site of the pain. Pain localised to the surgical site is usually due to surgical site infection, sternal instability, or sternal wires. Pain overlying the chest and not specific to the sternotomy scar can indicate underlying cardiac disease or intercostal nerve damage after harvesting of the internal thoracic or mammary artery for surgery.^{9,10} Isolated inferior chest wall pain can suggest gastro-oesophageal reflux disease.

Is the pain similar to what they experienced before surgery?

Patients will often be able to distinguish between new onset pain and recurrent pain based on preoperative symptoms. Suspect underlying heart disease if the pain is similar to preoperative anginal symptoms. Constant sharp pain can be due to anterior intercostal nerve irritation, which is common when the left internal mammary artery has been harvested.^{9,10} Sharp pain that increases on inspiration could suggest underlying respiratory pathology.

How did it start?

Abrupt onset of chest pain can indicate life threatening cardiac disease such as aortic dissection or ischaemic heart disease. Persistent pain since the operation is commonly described as chest pain with movement⁴ and is often musculoskeletal in origin.

Does the pain radiate to other sites?

Central chest pain that radiates to the neck or down either arm should raise suspicion of ischaemic heart disease. If pain radiates to the back, consider aortic dissection as a possible cause. Pain can radiate or be arising from a radial artery harvest site. Severe hand ischaemia after radial artery harvesting is a rare complication, and claudication pain is typically provoked by repetitive fist clenching. In contrast, chest pain radiating to the arm is characterised by generalised cardiorespiratory exertion, such as walking uphill.

What pain medications are you taking?

Ascertain the patient's postoperative pain medication regimen. Pain regimens on discharge will vary by institution and even treating surgeon. There is a lack of guidelines or consensus on an optimal pain control regimen on discharge after CABG. Most centres will follow an analgesic multimodal approach—that is, offering two or more drugs with different mechanisms of action for pain relief to minimise the need for opioids. Recent US guidelines recommend oral therapy with paracetamol (acetaminophen), non-steroidal anti-inflammatory drugs, oral opioids, and gabapentin or pregabalin for outpatients after surgery.¹¹

Do you currently smoke?

Observational studies have shown that ongoing smoking is closely linked to recurrent angina.¹²

Other symptoms

Fever—Fever in the immediate postoperative period should raise clinical suspicion of an underlying inflammatory or infectious process such as post-cardiac injury syndrome or sternal wound infection.

Shortness of breath—Dyspnoea can indicate underlying respiratory pathology in conjunction with other signs of infection suggesting pneumonia. Dyspnoea, along with fatigue or nausea, can also indicate acute coronary syndrome.¹³

Discharge from the sternotomy wound site—Erythema, discharge, or malodour from the surgical site points to sternal wound infection. The patient may have associated systemic symptoms of malaise, fever, nausea, and vomiting.

Examination

Assess the patient's vital signs, including blood pressure, heart rate and rhythm, oxygen saturation, respiratory rate, and temperature. Auscultate the chest to assess systolic and diastolic cardiac valvular function and all lung fields for normal air entry.

Examine the sternotomy site with the patient sitting. Feel the sternotomy scar with your index and middle fingers (fig 1 and video on bmj.com). If the patient complains of pain on palpation of the entire sternotomy site and is otherwise well, it is likely of neuro-musculoskeletal origin. Pinpoint palpation that causes an increase in pain only at that site could be due to a broken sternal wire. Place your thumb and index fingers on either side of the sternotomy site and ask the patient to take a deep breath and cough (fig 2, video). In mechanical non-union of the sternum, there will be presence of pain or clicking on doing this in the absence of infection.¹⁴ To assess for musculoskeletal pain, ask the patient to flex forward, extend backwards and rotate their thorax. Musculoskeletal pain will increase with movement (video).



Fig 1 | Examination of postoperative sternotomy for pain



Fig 2 | Examination of postoperative sternotomy for sternal instability

What investigations are required?

Fig 3 represents an algorithm chest pain diagnosis after CABG.⁶⁻¹⁷

Electrocardiogram

Request an electrocardiogram in all patients with chest pain after CABG at initial assessment. ST depression or elevation, T wave inversion, or new axis deviation can point to coronary artery ischaemia. If a previous electrocardiogram taken after surgery is available, compare this with the new one to look for changes. Widespread upwardly-concaved ST elevation is more suggestive of post-cardiotomy syndrome.

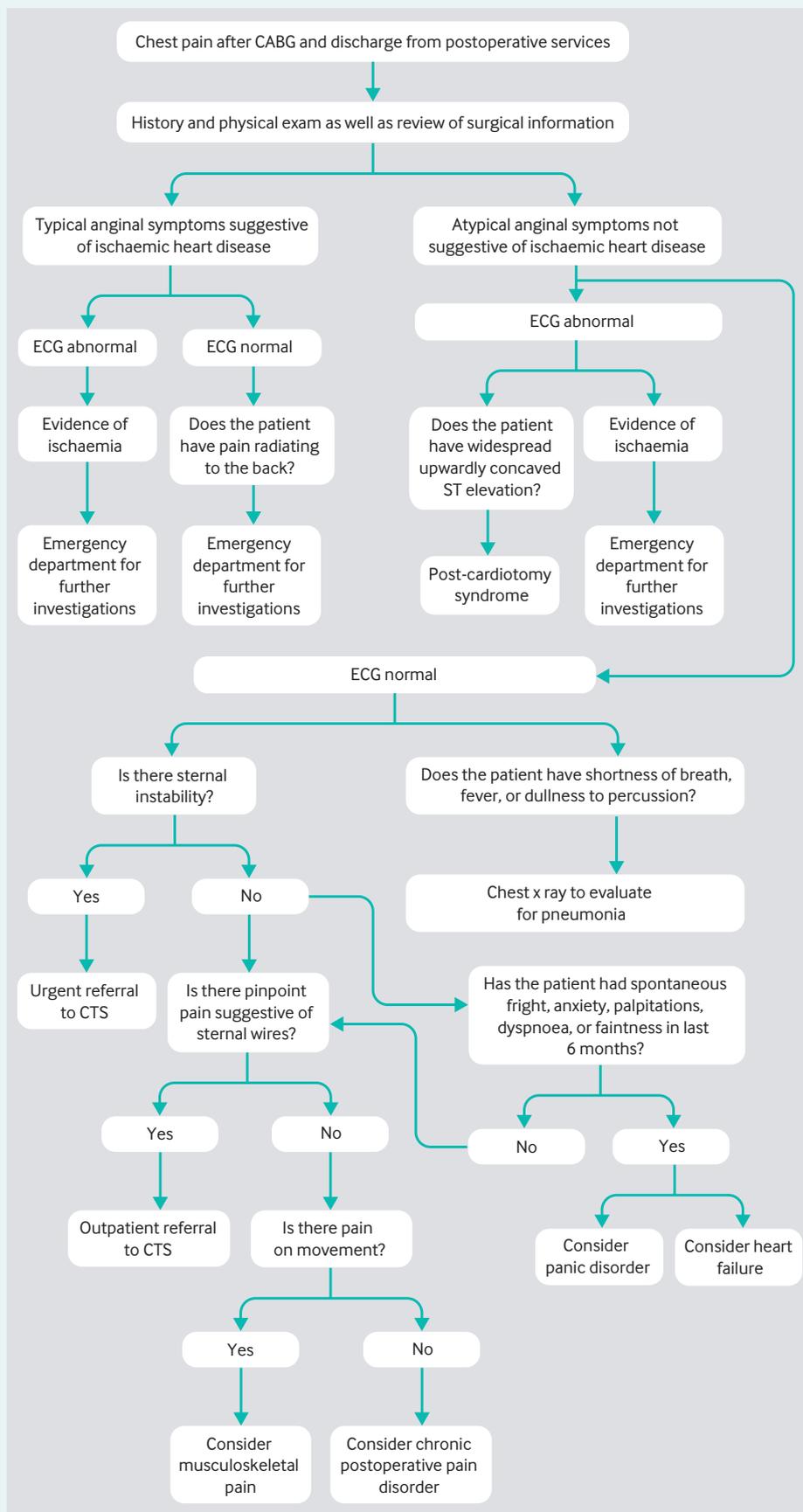
Laboratory tests

In patients with pain suggestive of ischaemic heart disease, prompt referral to emergency services is recommended. Before transfer, it would be reasonable to perform venepuncture and acquire blood for baseline testing. A blood test for cardiac troponins T and I can be ordered if the pain is suggestive of an acute coronary syndrome. This should not, however, delay transfer to emergency services. If the pain has resolved 24 hours before examination, it is still advisable to request a troponin assay.¹⁸ In clinically stable patients, ask for a complete blood count to detect anaemia (low haemoglobin) and infection (raised white cell count or C reactive protein). Microscopy and culture of blood or fluid from the sternal site may be required if wound infection is suspected.

Chest x ray

A chest x ray can help diagnose respiratory pathology such as effusion or pneumonia. A widened mediastinum with acute onset chest pain raises suspicion of aortic pathology. A pericardial or pleural effusion is seen in post-cardiotomy syndrome. Isolated pain at the sternotomy site in conjunction with findings of pinpoint pain on palpation, possibly over a raised area of skin, could be due to a sternal wire. A fractured sternal wire can be seen on the chest x ray.

Fig 3 | Clinical algorithm for management of chest pain after CABG



CABG=coronary artery bypass grafting
ECG=electrocardiogram
CTS=cardiothoracic surgery

Who to refer

Urgently refer patients to specialist cardiology services or the closest emergency department if they have:

- Sudden onset pain or pain that escalates in severity (may indicate ischaemic heart disease or aortic dissection)¹⁵
- Signs of sternal wound infection such as chest pain, sternal instability, fever, and purulent discharge from the mediastinum. Deep sternal wound infection has a mortality of up to 40%¹⁶
- A raised troponin level and electrocardiogram findings consistent with an acute myocardial infarction
- A widened mediastinum on chest x ray suggesting aortic dissection
- Pain with ambiguity over the diagnosis.

How to manage chronic postoperative pain

Clinically stable patients with persistent pain since surgery and normal investigations can be managed in primary care. Reassure the patient that their examination and investigations do not suggest a cardiac pathology. Pain on movement may be musculoskeletal in origin. Chronic postoperative pain does not increase on movement but has similar characteristics.

Preoperative anxiety has been linked to higher postoperative pain.²¹ There is, however, very limited evidence on the effect of cognitive behavioural therapy to improve postoperative pain.

Regularly review the patient's postoperative pain medication regimen.²³ Consult their cardiac team to discuss modifications. With any dose increase, review patients every four weeks.²⁴ Patients are unlikely to experience adequate pain relief in the long term if there is no response to opioids within three months.²⁴ Of note, there is a dose dependent relation between opioid use and development of chronic neuropathic pain.²⁵ Discuss tapering and discontinuing opioids if there is no improvement.²⁶ Offer referral to a chronic pain specialist if the pain does not improve.

At follow-up visits discuss lifestyle modifications such as diet, physical activity, and smoking.

Competing interests: None declared.

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Find the full version with references at <http://dx.doi.org/10.1136/bmj.l1303>

CASE REVIEW Disseminated subcutaneous nodules and destructive polyarthritis

A 56 year old man presented with multiple subcutaneous nodules over his body and deformities of both hands and feet. He had a seven year history of chronic peripheral polyarthritis (suspected to be rheumatoid arthritis) but had been reluctant to take antirheumatic therapy and did not attend clinic appointments. He consumed 40-60 g (5-7 units) of alcohol a day.

Examination revealed asymmetrical elastic, hard, painless, and partly ulcerated subcutaneous nodules around articular structures, tendons, and bursas (figure). The nodules restricted extension of the left forefinger and left knee.

Plain joint radiography of the fingers and toes showed widespread

destructive arthritis with joint dislocation, ankylosis, and well defined, punched out marginal erosions.

Ultrasound of the nodules, and of the finger, knee, and toe joints revealed hyperechoic linear densities over joint cartilage, hyperechoic spots in the synovium, and hypoechoic masses with hyperechoic spots. Laboratory findings are shown in the table.

- 1 What is the most likely diagnosis?
- 2 How is this condition confirmed?
- 3 What are the treatment options for this condition?

Submitted by Nobuya Abe, Yuichiro Fujieda, Olga Amengual, and Tatsuya Atsumi

Patient consent obtained.

Cite this as: *BMJ* 2019;365:l1344



Laboratory findings

Parameters	Result	Reference range
C reactive protein, mg/L	70.0	<1.4
Serum urate, mg/dL (μmol/L)	10.0 (594.8)	3.8-7.4 (226-440)
Rheumatoid factor	Negative	
Anti-citrullinated peptide antibody	Negative	

If you would like to write a Case Review or Spot Diagnosis for Endgames, please see our author guidelines at <http://bit.ly/29HCBAL> and submit online at <http://bit.ly/29yyGSx>

CASE REVIEW

Disseminated subcutaneous nodules and destructive polyarthritis

1 What is the most likely diagnosis?
Tophaceous gout. Chronic enlargement of generalised subcutaneous elastic nodules in someone with destructive arthritis and high alcohol intake is suggestive of tophaceous gout. Joint involvement is asymmetric and asynchronous. Raised serum urate is typical for tophaceous gout. On ultrasound, the double contour sign (hyperechoic linear density over the surface of joint cartilage) and monosodium urate deposits (hyperechoic spots and masses) in the synovium are characteristic of tophaceous gout. On radiography, punched out marginal erosions (also known as overhanging edges) are characteristic of chronic gout. Rheumatoid arthritis is less likely in this patient because of his seronegativity and polyarthritis with asymmetry and asynchronousy.

2 How is this condition confirmed?
The diagnosis is usually clinical, but evidence of monosodium urate crystal deposition can be confirmed by dual energy computed tomography and magnetic resonance imaging. Monosodium urate crystals in tophus aspirates provides a definitive diagnosis.

3 What are the treatment options for this condition?

- Prompt urate lowering therapy.
- Non-steroidal anti-inflammatory drugs and colchicine to prevent gout flares during urate lowering therapy.
- Weight reduction with dietary changes, moderation of alcohol consumption, and avoidance of medications that induce hyperuricaemia, such as diuretics and low dose aspirin.
- Consider surgery for cosmetic reasons, or in cases complicated by soft tissue infection, nerve compression, joint deformity, and severe pain despite urate lowering therapy.

LEARNING POINTS

- Clinical manifestations of inflammatory arthritis include recurrent flare, chronic arthropathy, tophaceous deposits, urate nephrolithiasis, and chronic nephropathy.
- The European League Against Rheumatism recommends achieving a serum urate level <5 mg/dL5 to prevent progression of gouty complications, including tophi.

For extra material, including patient outcome, go to bmj.com/endgames

answers



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Ocular complications of a haircut

A 21 year old man presented with a five day history of irritation and redness in the right eye that had not resolved with chloramphenicol ointment.

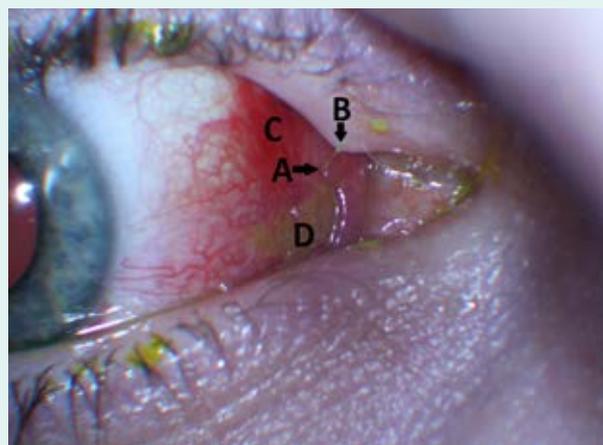
Visual acuity was normal. Slit lamp examination revealed a cut end of hair (fig 1A) in the upper punctum (B), causing subconjunctival haemorrhage (C) and conjunctival abrasion (highlighted by yellow fluorescein staining) (D).

The patient reported that his symptoms began during “a trim.”

Suspect a trapped punctal hair with medial conjunctival abrasions. The lacrimal pump sucks tears through the puncta into the lacrimal sac; however, scalp hair gets stuck and causes damage to the conjunctiva. It could also cause canalicular inflammation and infection, inducing epiphora and discharge.

Zhiheng Lin (zlin@doctors.org.uk); Sofia Habib Norfolk and Norwich University Hospital Eye Department, Norwich, UK
Patient consent obtained.

Cite this as: *BMJ* 2019;365:l1424



If you would like to write a Minerva picture case, please see our author guidelines at <http://bit.ly/29HCBAL> and submit online at <http://bit.ly/29yyGSx>

Acute pancreatitis in elderly patients

A retrospective review of 900 patients who presented with acute pancreatitis to a hospital in Rome, Italy since 2008 finds that the condition is more serious in older patients (*Scand J Gastroenterol*). Case fatality was more than three times higher, admissions to intensive care units three times more frequent, and length of hospital stay several days longer in people who were older than 65. This is not surprising since age is a component of the Ranson score, which is long established as a prognostic indicator in acute pancreatitis.



Diagnosing infection in older people

Infections can be hard to identify in older adults, and diagnostic decision aids and symptom scores have not proved helpful. An analysis of a series of cases presenting to an emergency department in the United States asks if non-specific signs and symptoms—altered mental status, malaise, or lethargy—should be given more weight (*J Am Geriatr Soc*). Unfortunately, it finds that none of these features substantially increases the probability that a bacterial infection is present. The best predictive sign of infection was a fever of 38°C or higher.

Benzodiazepines, Z-drugs, and dementia

Using the UK’s Clinical Practice Research Datalink, investigators identified 40 000 cases of dementia and matched them with as many as seven controls per case for age, sex, and deprivation category (*Am J Epidemiol*). The purpose was to explore links between prescriptions of benzodiazepines and Z-drugs, and a diagnosis of dementia. Results varied slightly depending on the time between exposure and outcome, adjustment for potential confounders, and whether new or prevalent users were included in the analysis. However, none pointed to a causal link between taking any of these drugs and the subsequent occurrence of dementia.

Neurofilament light chain levels in parkinsonian syndromes

Follow-up of 156 patients with signs and symptoms of a parkinsonian syndrome but in whom the precise diagnosis was in doubt suggests that measurement of serum levels of neurofilament light chain might help reach an earlier diagnosis (*Neurology*). In people who were later diagnosed with multisystem atrophy or progressive supranuclear palsy, levels of this polypeptide had

been substantially higher than in people whose final diagnosis was Parkinson’s disease. However, neurofilament light chain levels are raised in several neurodegenerative diseases and the test may lack specificity.

Safety of percutaneous gastrostomy

Percutaneous endoscopic gastrostomy is an effective way of maintaining nutrition in people with disordered swallowing but normal gut function. Although a retrospective review of nearly 500 cases finds that mortality among patients who underwent this procedure is high, deaths were caused by the underlying disease rather than by a complication of the feeding tube or its insertion (*Scand J Gastroenterol*). Serious adverse effects from the procedure itself occurred in less than 2% of cases.

Cite this as: *BMJ* 2019;365:l1645

