RATIONAL IMAGING

Suspected left sided diverticulitis

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This series provides an update on the best use of different imaging methods for common or important clinical presentations. The series advisers are Fergus Gleeson, consultant radiologist, Churchill Hospital, Oxford, and Kamini Patel, consultant radiologist, Homerton University Hospital, London. To suggest a topic for this series, please email us at practice@bmj.com.

De Korte and colleagues make the case for using ultrasonography as the first investigation to confirm the diagnosis in patients with suspected diverticulitis

A 55 year old man presented to the emergency department with a two day history of progressive pain in the left lower quadrant. On physical examination he had a temperature of 38°C and marked tenderness in the left lower quadrant and some tenderness in the suprapubic area. No rebound tenderness was present. Laboratory testing showed a C reactive protein concentration of 25 mg/L and a white cell count of 13.8×10^9/L.

What is the next investigation?

This patient is suspected of having a left sided diverticulitis. Diagnosis based solely on clinical and laboratory parameters is imperfect. The sensitivity for diagnosing acute diverticulitis on clinical grounds alone is only 68%.[1] A small subset of patients with pain only in the lower left quadrant, raised concentration of C reactive protein, and the absence of vomiting has recently been identified in which diverticulitis can be identified with a high degree of diagnostic accuracy without additional imaging.[2 3] These results, however, should be validated in a prospective cohort. In most patients with suspected diverticulitis additional imaging is required to confirm the diagnosis.

Ultrasonography—The use of ultrasonography as a first line investigation for diverticular disease is controversial, and most guidelines advocate the use of computed tomography.[4-6] Some studies, however, have shown that graded compression ultrasonography has a diagnostic accuracy for diverticulitis of up to 92% sensitivity and 90% specificity. In graded compression ultrasonography interposing fat and bowel can be displaced or gradually compressed to show underlying structures. If the bowel cannot be compressed, the non-compressibility itself is an indication of inflammation.[7] Ultrasonography is widely available, cheap, and avoids exposure to radiation. It does, however, have major limitations, such as operator dependency, limited experience and availability in some countries, and limitations in obese patients, which is probably why it is not yet widely used as the first investigation. Ultrasonography can also be less accurate in identifying the complications associated with diverticular disease, such as small abscesses, deep pelvic abscesses, and small amounts of free air, although the only available evidence shows that it is as good as computed tomography in identifying abscesses in diverticulitis. Only one small study prospectively compared computed tomography and ultrasonography in diver-

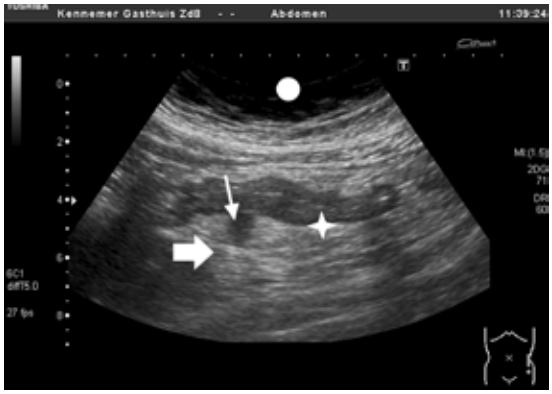

Fig 1| Graded compression ultrasound image showing compressed sigmoid colon loop (star) with diverticulum (small arrow) with inflamed pericolic fat (large arrow). Ultrasound transducer is marked with circle

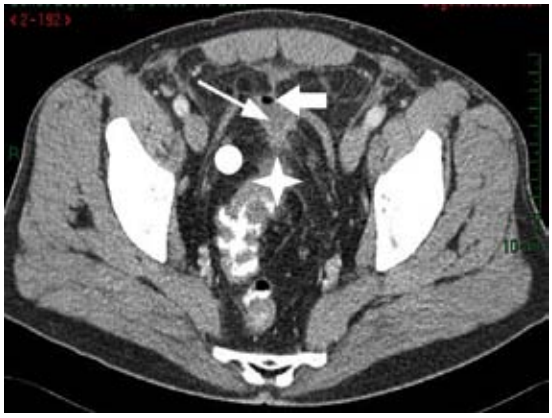

Fig 2| Computed tomogram showing loop of sigmoid colon (star) with pericolic abscess with fluid (small arrow) and air (large arrow). Inflamed pericolic fat is marked with circle

LEARNING POINTS

Left sided diverticulitis can be accurately diagnosed by clinical findings and laboratory tests in only a few patients so imaging tests are usually necessary to confirm the diagnosis

Computed tomography and ultrasonography have similar diagnostic accuracy for uncomplicated diverticulitis, but as ultrasonography is widely available, cheap, and avoids exposure to radiation. When possible it should be the first choice of imaging to confirm the diagnosis

In the case of non-diagnostic or inconclusive results on ultrasonography, computed tomography should be performed as it is superior to ultrasonography in identifying an alternative diagnosis

In a critically ill patient, with a clear indication of infection or high fever, computed tomography should be done without delay to rule out complicated (abscess, perforation) diverticulitis and to guide treatment

Modified Hinchey classification of acute sigmoid diverticulitis	
Stage	**Description**
Ia	Confined pericolic inflammation
Ib	Pericolic or mesenteric abscess
II	Walled off pelvic abscess
III	Generalised purulent peritonitis
IV	Generalised faecal peritonitis

ticulitis and found good agreement between the two techniques for abscesses (κ=0.69).[8]

Computed tomography—Computed tomography has slightly higher diagnostic accuracy than ultrasonography (sensitivity 94%, specificity 99%), though in a recent meta-analysis this was not significant.[7] It is superior to ultrasonography for alternative diagnoses, with a sensitivity between 50% and 100% compared with a sensitivity of 33% and 78% for ultrasonography.[7] Furthermore, it is more useful in the planning of percutaneous drainage of an abscess or surgery.[7] The main drawback of computed tomography is the exposure to radiation. The newest generation scanners that use advanced reconstruction algorithms, however, can reduce the dose by up to 50%. Moreover, low dose unenhanced computed tomography offers equal diagnostic accuracy compared with normal dose scanning with oral or intravenous contrast.[9]

Computed tomography and ultrasonography—The prospective OPTIMA study compared the two techniques head to head in 1021 patients with acute abdominal pain and provided the highest level of evidence for a diagnostic accuracy study. A strategy of ultrasonography first and computed tomography only in those with inconclusive or negative results resulted in the best sensitivity and lowest exposure to radiation.[10 11]

We believe that, if the skills and technology are available, ultrasonography can be used confirm the diagnosis in a patient with suspected acute uncomplicated diverticulitis. This is based on the highest level of evidence available and contradicts most (older) guidelines. This is the case in most patients presenting with acute diverticulitis.[12] Computed tomography should be carried out in a critically ill patient with a clear indication of infection (raised C reactive protein concentration, raised white cell count) or high fever in whom complicated diverticulitis (abscess or perforation) is suspected or in a patient with inconclusive or negative results on ultrasonography.[10 11]

Magnetic resonance imaging—Magnetic resonance imaging could combine the advantages of computed tomography without the exposure to radiation. Reported sensitivity rates vary between 86% and 100% and specificity rates between 88% and 100%.[13] Limited availability, high costs, length of the examination, and limited experience hamper the current use of magnetic resonance imaging in the diagnosis of diverticulitis.

Outcome

Ultrasonography showed thickening of the sigmoid bowel wall and inflammation of the pericolic fat around a diverticulum consistent with sigmoid diverticulitis (fig 1). The patient was admitted to hospital for bowel rest and given intravenous antibiotics, although the use of antibiotics in uncomplicated diverticulitis is disputed.[14 15] After two days there was a distinct rise in temperature to 39°C. Because complicated diverticulitis was suspected, computed tomography was performed and showed a pericolic abscess consistent with Hinchey Ib (table) diverticulitis (fig 2). Diverticulitis with pericolic abscess formation is generally treated with antibiotics alone.[16] In this patient antibiotic treatment was continued, the fever subsided, and infection parameters declined. He was followed up at the outpatient clinic with continuation of oral antibiotic treatment for 10 days. Four weeks after the initial presentation, results of laboratory tests were normal, he was free from pain, and there were no problems with defecation.

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- Investigating urinary tract infections in children (*BMJ* 2013;346:e8654)
- Investigating pleural thickening (*BMJ* 2013;346:e8376)
- Investigation of acute knee injury (*BMJ* 2012;344:e3167)
- Investigating the solitary pulmonary nodule (*BMJ* 2012;344:e2759)
- Investigating focal liver lesions (*BMJ* 2012;344:e657)

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A PATIENT'S JOURNEY

Psychotic depression

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This patient works as a psychiatrist in the hospital where she is treated, and has been admitted, for depressive disorder. She tells her story, and describes her feelings about other health professionals' attitudes towards her

I had an easy early life. My family was a combination of conservative and intellectual, and throughout medical school I fitted in. There were, perhaps, a number of warning signs of what was to come—a long period of blackness after a relationship ended, and one of poorly controlled mood before final exams—but hardly different from many others. I was unaware at that time of family history.

I coped well with the stress of house jobs followed by a number of senior house officer jobs and a period of travelling. I then decided, for romantic and literary reasons, to do my GP training year in Cornwall. It was hard work, but all went well until, after my marriage, I found myself rather unexpectedly—though not unhappily—pregnant. Quite suddenly my life fell apart. I don't remember feeling depressed, but I became terrified of everything, afraid to eat, and convinced the baby would die. I saw a psychiatrist, who dispensed with note taking as it might apparently affect my career, and ended

This is one of a series of occasional articles by patients about their experiences that offer lessons to doctors. The *BMJ* welcomes contributions to the series.
Please contact Peter Lapsley (plapsley@bmj.com) for guidance

A CLINICIAN'S PERSPECTIVE

Rebecca meets the diagnostic criteria for recurrent depressive disorder (ICD-10 code F33), and during an episode she often has psychotic symptoms. At her most ill, Rebecca is convinced that she is a terrible doctor, about to be referred to the General Medical Council, and a burden on others. Her view that she has a personality disorder rather than depression, which I do not agree with, also comes to the fore. Reassurance, rational challenge, and cognitive therapy do not cut much mustard at these times.

Depression that may benefit from treatment is so common—affecting about 5% of the population at any one time, about 20% each year, and 50% over the average lifetime—that it is part of most lives in some way. Psychotic depression is, however, rare, with a lifetime risk of only 0.35%. In other words, less than one in 100 people with depression will have psychotic symptoms. There is much debate about how to manage "everyday" depression, but psychotic depression needs treatment to avoid the risks of dehydration, starvation, and suicide. Electroconvulsive therapy is the evidence based treatment of choice and can be lifesaving.

It took almost two years of drug treatment, including two courses of electroconvulsive therapy, before Rebecca recovered from her first episode 20 years ago. She completed her training under the cloud of her illness but had good spells, sometimes without treatment. About four years ago, another course of electroconvulsive therapy, in another health district, was followed by a return to maintenance treatment with lithium and fluoxetine. Towards the end of last year, we avoided hospital admission with quetiapine augmentation, but some combination of Rebecca stopping that drug, going back to full time work, and perhaps a naturally worsening episode underneath it all led to a relapse earlier this year.

Reinstating and then maximising the dose of quetiapine helped a bit, affording some respite from insomnia but bringing weight gain. Rebecca and her husband suggested electroconvulsive therapy, done locally to reduce disruption to the family but as an outpatient to minimise the chances of bumping into colleagues. All the medical and nursing staff involved went out of their way to make it go successfully with a minimum of fuss. We have recently added tri-iodothyronine hormone augmentation, with apparent success, so that quetiapine can be reduced. Once Rebecca has been well for 6-12 months, we could phase out medication.

Rebecca is now back to her usual self—an excellent clinician and active in educating students, mentoring trainees, audit, and research. Her abilities make her a highly valued member of the team, and a dry and often self deprecatory wit contribute to her popularity around the hospital and beyond.

I admire Rebecca for having the courage of her convictions and publishing this piece. It is brave to do so, but I doubt that anyone will think less of her for having depression, and most will applaud her in being so open about it. As she says, it will allow her to know that everyone knows, or at least could know, rather than having to deal with the uncertainty of not knowing and people being unable to talk about it. This will not, of course, preclude insensitive remarks, even if they are made in the guise of empathy or with the best of intentions. What we really need to reduce and ultimately defeat the stigmatisation of psychiatric disorders, and to allow people to practise talking about them with some sophistication, is capable people like Rebecca saying how it is: that one can have severe psychiatric disorders, respond to treatment, and get back to a productive, happy life at work and with family.

What are the learning points from all of this? For starters, that careers advice is best left out of doctor-patient consultations. That the vicissitudes of life as a clinician or academic are as nothing compared with accepting and managing a major illness and the treatment for it. That it is difficult for people to share their innermost thoughts with a doctor, especially if he or she is a colleague. I am reminded of the primacy of patient experience, the power clinicians have, and the trust required in and of them. It may not be straightforward having a doctor as a patient, but it is a lot easier than it is for a doctor to be a patient. Being a doctor is almost always easier than being a patient. Having a colleague as a patient helps one to appreciate the inevitable but necessary power imbalance in the doctor-patient relationship. Perhaps that is why I was so pleased that Rebecca told me, at our most recent appointment, that it was the first time she hadn't been nervous about seeing me.

Preparing this text has crystallised these thoughts for me. I hope the article contributes to de-stigmatising depression among doctors and others, and helps Rebecca and those around her manage her illness as best we all can.

Stephen M Lawrie

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Previous articles in this series
- Klinefelter's syndrome—a diagnosis mislaid for 46 years (*BMJ* 2012;345:e6938)
- Kallmann syndrome (*BMJ* 2012;345:e6971
- Non-coeliac gluten sensitivity (*BMJ* 2012;345:e7982)
- Restless legs syndrome (*BMJ* 2012;345:e7592)
- Thoracic outlet syndrome (*BMJ* 2012;345:e7373)

USEFUL RESOURCES FOR PATIENTS AND HEALTH PROFESSIONALS

- Doctors Support Network (www.dsn.org.uk)—A confidential self help group for doctors
- Depression Alliance (www.depressionalliance.org) —Provides information and support services in the UK
- Royal College of Psychiatrists (www.rcpsych.ac.uk)—UK professional and educational body for psychiatrists; provides educational material and information for psychiatrists and general public
- Samaritans (www.samaritans.org)—National charity providing confidential emotional support
- Befrienders Worldwide with Samaritans (www.befrienders.org) —Worldwide confidential emotional support
- National Institute of Mental Health (www.nimh.nih.gov) —Provides mental health information and education in the US
- Beyondblue (www.beyondblue.org.au)—National, independent, not for profit organisation working to address issues associated with depression, anxiety, and related disorders in Australia

up briefly in a psychiatric hospital before being looked after by one of my fellow GPs, my husband, and my mother-in-law. I had no idea what was wrong with me.

When I was around five months pregnant, we moved back to Edinburgh and went to our GP, who immediately referred me to a psychiatrist, who sent me straight to the local hospital. I had last been there as a medical student, several of my friends and colleagues worked there, and my previous life as a doctor was instantly shattered. I had hoped to train as a psychiatrist myself, and I thought that possibility was now extinguished, that anyone who had been a psychiatric inpatient would never be accepted as a colleague.

I don't really know how I felt—bleak and exhausted, but also sad and angry, especially when I saw other doctors apparently confident and successful. I had a series of admissions, both before and after my baby was born.

What was my diagnosis? How to classify the feelings of fear, terrible fatigue, anxiety, and blackness? Depression was what I was told, but I formed an unshakeable conviction that everyone thought I had a personality disorder. Looking back, I still think my personality was sorely tested by my experiences. I did improve with electroconvulsive therapy and medication, but hated taking them.

Finally, after a period of relative stability, I managed to return to work, to a junior hospital post. I hadn't worked for two and a half years, and felt incompetent and inadequate. I subsequently finished my GP training, but realised I would be unlikely to get a job given my medical history. When I look back now, I wonder how I had the courage, or the cheek, to apply for a psychiatric training scheme. One of my psychiatrists advised me not to, and I am generally very reluctant to do things others disapprove of, but I think I knew I would always regret not doing it.

I had a long commute, as I, and others, felt I could not work locally. I loved the work and think I was good at it, but I can't pretend it wasn't emotionally draining. I have always felt like two people—the psychiatrist and the psychiatric patient—and it is very difficult when they overlap. I even use two names, as do many female doctors, but I think my reasons are slightly different.

My training proceeded well, and I was lucky to experience no problems with exams. Life was not straightforward, though. I had an early stillbirth, and, perhaps inevitably, a relapse followed. But I picked myself up, and staggered through another pregnancy as well as my training. Looking back, I think I was very anxious for some years after this, but relatively well otherwise, at least partly due to my always supportive husband. I think I took medication for much of the time, but certainly had some lucky periods where I didn't.

My husband has always found the switch from spouse to carer and back rather difficult, particularly during periods of recovery, and especially given that I don't really appreciate what I'm like when ill. He also finds my occasional noncompliance with medication understandably infuriating. But I admit I worry more about the potential effect on my three daughters. Any illness in a parent is both frightening and annoying for children, and mine isn't an easy one to understand, or indeed to explain to friends or teachers. Worse, I've not always been there for them, and one of them has experienced emotional difficulties. I can't prove that my illness caused this, but I'm pretty sure it contributed, and I shall always bear the guilt.

Six years ago I gained a consultant post in addiction psychiatry in the local hospital where I had been a patient. I had been a trainee with my colleagues, and, for the first time, had not divulged my history. In fact, I thought they knew and was rather mortified when I subsequently discovered this was not the case. But I couldn't quite believe it—a job near my home in the specialty of my choice. Initially, I found that walking past wards where I had been a patient was troubling, but I gradually stopped thinking of myself as a patient.

Unfortunately I have since had episodes of illness, one necessitating an admission out of area and another resulting in a series of electroconvulsive therapy as a day patient in the hospital where I work. I still find the experience of illness troubling and confusing—in many ways it makes me feel like a different person. When I read a textbook description of psychotic depression, my diagnosis, I can't marry it with how I feel. I do feel low, but also agitated and frightened, and simply very ill. I still fear that others think I have a personality disorder. And this, for me, is one of the harder aspects. I work in a hospital where I've had some significant admissions and treatment. I find it hard when I speak with doctors who have treated me. But what is far worse is the uncertainty as to whether others—doctors and nurses—have seen me as a patient, or have listened to the inevitable hospital gossip, and formed opinions.

My memories of my periods of illness are very muddled, and I simply don't know who knows or who has treated me. My close colleagues are hugely supportive, but I've heard talk about psychiatric patients, including about healthcare professionals, and it's not all kind. It's difficult to sit in a ward round talking with a nurse I suspect may have seen me in much unhappier circumstances, and I can't help wondering whether people think I shouldn't work here. My current plan is to be more open and to tell people, but that's not easy either. Often they're very embarrassed, and I don't want my patient status to become the most important thing that people know about me.

Some day I hope my two selves will become less separate, and my working life will become more comfortable. Until then I will try to comply with my psychiatrist's advice, try to remain well, and to make sure the psychiatrist remembers what the patient experiences.

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