PRACTICE POINTER

How to communicate with patients who are D/deaf or have hearing loss

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CPD READING
0.5 HOURS

In the UK, around 1 in 7 people have hearing loss, rising to 1 in 2 of those aged over 70 years.[1] Data from the World Health Organization indicate that in 2018, 466 million people (6.1% of the world's population) had hearing loss; a figure expected to rise to 630 million by 2030.[2] D/deaf (see box 1 for note on terminology) patients have a variable presentation, ranging from mild difficulties understanding speech in noisy environments through to little or no speech recognition. Deafness is often a "hidden" impairment yet is a significant risk factor for social isolation and mental health problems.

The coronavirus pandemic has exacerbated the communication difficulties that D/deaf patients face, as mask wearing obscures access to facial features needed for lipreading and non-manual features of sign language.[13-15] This article outlines strategies to improve communication with D/deaf patients in clinical practice.

WHAT YOU NEED TO KNOW

- Asking, "How can I help you hear and communicate?" ensures that patients are fully involved in decisions about their care
- A Deaf person who uses British Sign Language (BSL) has a legal right to services in their own language. Support D/deaf people in using their preferred method of communication in line with relevant legislation such as the Equality Act (2010). This applies to face-to-face and remote consultations
- Registered, qualified interpreters should be booked in advance of appointment. Video interpreting services are also available

Why do we need to improve communication with D/deaf patients?

Barriers to communication, such as a lack of interpreters and difficulty accessing health services (for example, where telephone-only access is provided), mean that D/deaf people are less likely to seek healthcare, have poorer access to adequate health information, and consequently experience adverse health outcomes.[3 6 16-19] Deaf patients are more likely to have undiagnosed hypertension, diabetes, and hypercholesterolaemia.[6] Even when these conditions are diagnosed in D/deaf patients, they are less likely to be adequately treated, thereby increasing morbidity and mortality from cardiovascular disease and diabetes.[6 18 19]

Semi-structured interviews with 98 Deaf people in North West England revealed that 40% had complained about GP services in the previous 12 months, compared with 11% in the general population.[20] Problems highlighted included difficulty booking appointments, not knowing when they would be called, failure of healthcare professionals to communicate adequately, and lack of interpreter provision.[20] Survey data from Action on Hearing Loss show that one in three D/deaf patients left their GP consultation with no better understanding of their illness or medical advice. One in four had been prescribed medication without adequate information.[9] Increasing severity of hearing loss is associated with both poorer speech intelligibility and recall of consultations, particularly in noisy environments.[22]

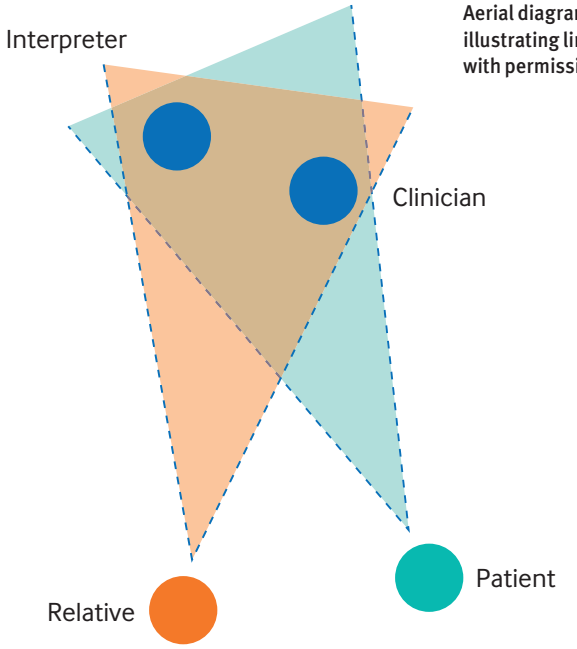
The GMC states that patients should have access to "communication in a way that [they] can understand."[25] By law, all NHS organisations must follow the Accessible Information Standard, which sets out a consistent approach to identifying, recording, and meeting the information and communication support needs of patients, service users, carers, and parents with a disability, impairment, or sensory loss.[26]

How can we improve communication with D/deaf patients?

Asking patients at the outset "How can I help you hear and communicate?"[31] ensures that patients are fully involved in decisions about their care.

Making and preparing for an appointment

Many D/deaf people struggle to hear on the telephone. Some may use a service where typed messages are relayed via a live operator (such as Relay UK) or simultaneous video relay with a sign language interpreter. Captioned telephone services are not available in the UK, but they are



Aerial diagram of the clinic set-up illustrating lines of sight. Adapted with permission from Harris et al[36]

in other countries such as Australia, New Zealand, and the US. Offer to communicate via text, email, or online if the appointment needs to be changed, and especially if an interpreter is required.

Ask about and document the preferred communication methods of D/deaf patients in their medical records. Interpreters, where needed, should be qualified and booked in advance of the appointment.[32] The use of family members to provide interpretation is inappropriate and compromises privacy and patient autonomy.[34]

Arriving for the appointment

Find out if patients need to be met in the waiting room for their appointment. Waiting to be "called" causes considerable anxiety for D/deaf patients due to fear of not hearing their name and missing appointments.[20] Visual and vibrating call systems may be helpful.

Be prepared to repeat or rephrase what you say and provide short, clear instructions

Room set-up

Identify quieter, well lit clinic rooms to use for consultations with D/deaf patients. Personal amplifiers or microphones that carry sound to patients via headphones or earbuds are inexpensive and may benefit patients with milder hearing loss.[14 35] Patients with a hearing aid or cochlear implant may benefit from a fixed or portable loop system in the clinic room enhancing sound clarity and reducing background noise.

Face the patient when you communicate, ensuring you address them directly, even when other individuals are present. Check that there is no glare from a window behind you. The room set-up should enable the patient to see both you and, where present, the interpreter (figure).[36]

Establish communication preferences and open the visit

Even when patients do not have disclosed hearing loss, it is always good practice to inquire whether they can hear you, particularly when undertaking consultations with older adults. The preferred communication method for the patient should be checked at the start of the appointment, and should guide the consultation, correspondence, and follow-up arrangements. Where a registered interpreter is needed, but not present, offer the patient the option to have a video-interpreted consultation where available, or the appointment rescheduled for the near future

If D/deaf patients prefer to communicate with speech and masks are required for infection control purposes, use a clear mask or screen wherever possible. Speak clearly using normal facial expressions and gestures, as shouting and exaggerated lip movements make lipreading harder. Be prepared to repeat or rephrase what you say and provide short, clear instructions for examinations (box 2). In some circumstances, for instance where clear masks or an interpreter are unavailable, writing notes may support communication, but this is time consuming. Automated speech-to-text software on a smartphone or desktop computer is faster and is well understood by patients,[37] although it is not always accurate word for word.

Box 1 | Terminology, identity, and language around hearing loss

The term "D/deaf" is used throughout this article. "Deaf" refers to patients who primarily use sign language and identify with Deaf culture and the Deaf community, whereas "deaf" refers to those who primarily use spoken English (or their native spoken language). Patients in either group may use hearing aids or cochlear implants. The term "hard of hearing" is used by a wide range of patients; including older adults and those with mild hearing loss.

It is worth noting that the identity of many Deaf patients is one of a belonging to a cultural minority group rather than being disabled per se. We have used the term BSL interpreter throughout this article: this refers to translation from English to British Sign Language (BSL), although patients from other English speaking countries may need interpretation from English to American Sign Language (ASL), Australian Sign Language (ASL), or Irish Sign Language (ISL). Some D/deaf patients prefer to use Sign Supported English, a lipspeaker, note taker, or speech-to-text reporter for communication support. Sign languages, including BSL, have a different grammatical structure to English, and some Deaf people whose primary language is BSL (or other sign language) may have difficulty reading written English.

Box 2 | Tips for communicating with D/deaf patients who use spoken languages

- Gain the patient's attention before speaking
- Minimise background noise (for example, from air conditioning units)
- Ensure your face is well lit and ensure there is no glare (such as from a window) behind you.
- Face the patient when communicating; don't look at the computer or turn away from the patient when speaking
- Use clear speech at an audible volume, but do not shout
- Introduce the topic of conversation
- Repeat sentences again if asked, then rephrase if this does not help
- Use diagrams, written information, and gestures where required
- Use short, clear instructions with gestures to reduce anxiety and ensure the patient (and interpreter) understand the purpose of any examination
- Offer an email address the patient can use in the event of queries after the consultation

Box 3 | Tips for consultations with sign language interpreters

- Allow a longer appointment slot
- Booked interpreters should be registered (such as with the NRCPD in the UK)
- Ensure room set-up enables the patient to see both you and the interpreter
- Introduce yourself clearly and outline the purpose of the appointment
- Talk to the patient, not the interpreter
- Use plain language; avoid medical terminology, jargon, and proverbs
- Not all words have a precise equivalent in sign language; be patient as the interpreter may take longer to interpret than you expect
- Sign language users may prefer visual information to written notes; consider using diagrams and showing scans when explaining results or procedures
- Ask the patient to relay back to the clinician what they have understood about the information provided, in order to check understanding
- Find out whether the patient will be able to understand their clinic letter, or if a signed version will be required

The grammatical structure and syntax of signed languages is different to that of the commonly spoken native language, and not all spoken words have a signed equivalent. This is true for the relationship between BSL (and other signed languages used in English speaking countries, such as ASL, Auslan, ISL) and English. Written notes or speech-to-text software may therefore not be well understood by patients who primarily use a signed language. Similarly, differences in grammar and syntax may result in a sign language interpreter taking longer than you expect to convey information (box 3).

Make positive eye contact and show your name badge rather than just stating your name, which may be misheard. Introduce any other professionals in the room and gain patient consent for them to be present. If you need to communicate with other professionals or the interpreter, explain to the patient what you are discussing. Learning a few simple signs, including how to introduce yourself and fingerspell your name, can help to establish rapport with sign language users.

Learning a few simple signs, including how to introduce yourself and fingerspell your name, can help to establish rapport

Remote consultations using telephone and video calling

Avoid telephone consultations unless D/deaf patients have expressed a preference for their use. Video consultations may be suitable where a high quality internet connection is present. D/deaf patients with a good level of literacy may benefit from automated captions or a live speech-to-text reporter for captions.

Services such as InterpreterNow in the UK or federally funded Video Relay Services in the US provide simultaneous online sign language interpretation for video consultations and can be used in emergencies when it is not possible to pre-book an interpreter.

EDUCATION INTO PRACTICE

What practical changes could your surgery or department make to improve communication with D/deaf patients?

- Establish a practice register or code for patients with hearing loss. Is this information easily identifiable to the clinician when booking in or starting a consultation?
- Encourage D/deaf healthcare staff to share lived experience of living with deafness with colleagues and peers.
- Consider organising a departmental deaf awareness training session.
- Survey D/deaf patients in the practice or outpatient department clinic about their communication experiences with your service.
- Include D/deaf patients in patient engagement groups to help inform strategies for improving access to healthcare and outcomes for those with hearing loss.

Audit suggestions

- Audit cardiovascular and diabetic risk factors among patients with hearing loss. Have these individuals been contacted, screened, and managed in accordance with guidelines?

How should we provide healthcare information?

Again, asking patients about their communication preferences is important here. The significant differences in grammatical structure and syntax between written and signed languages means that written clinic letters and health information may be less easily understood by Deaf sign language users.[38-40] For Deaf patients who prefer not to communicate in writing, offer signed healthcare resources such as a DVD with signed interpretation of the clinic letter and relevant health information.[41] In the UK, BSL users can be directed to SignHealth's free online library of nearly 300 BSL videos covering a wide variety of health related topics (signhealth.org.uk/health-video-library/). Similarly, CardMedic is a series of digital health information flashcards developed by medical professionals that are available online or for download to a phone (https://www.cardmedic.com). They cover a wide variety of topics in more than 30 languages, including BSL with subtitles.

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HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

The article was reviewed by two deaf people who provided their comments on the manuscript. Changes were made in relation to terminology (the use of "impairment" rather than "disability") in keeping with the social model of disability. Statistics on the numbers of BSL users were clarified, and references to the Accessible Information Standard were strengthened. Additional communication tips were added. The importance of clarifying any communication between healthcare professionals at the appointment, in order to avoid unnecessary anxiety, was also highlighted.

RATIONAL TESTING

Role of C reactive protein and procalcitonin in the diagnosis of lower respiratory tract infection in children in the outpatient setting

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CPD READING
0.5 HOURS

A previously healthy and fully vaccinated (including 13-valent pneumococcal conjugate vaccine) 22 month old boy is brought to the emergency department because of a 12 hour history of high fever (up to 40°C). He had had low grade fever, runny nose, cough, and decreased oral intake for the past two days. On examination, he did not look severely ill but was febrile (38.3°C). His respiratory rate was 45 breaths/minute (normal range 25-40 breaths/min at 18-24 months old), heart rate was 140 beats/minute (normal range 98-135 beats/min at 18-24 months), and blood oxygen level was 95%. Although breath sounds were not decreased, some bibasilar crackles were noted on chest auscultation. A chest x ray was interpreted as having bilateral peribronchial infiltrates and haziness in the right lower lobe. To aide their decision whether to initiate antibiotic therapy, clinicians requested blood tests, which revealed a white blood cell count of 22.5×10^9/L (60.0% neutrophils), a CRP of 30 mg/L (normal <5 mg/L), and a PCT of 0.25 µg/L (normal <0.5 µg/L).

WHAT YOU NEED TO KNOW

- The difficulty of discriminating between viral and bacterial lower respiratory tract infection (LRTI) in children using clinical features alone often leads to overprescription of antibiotics
- Biomarkers such as C reactive protein (CRP) and procalcitonin (PCT) have a limited capacity to rule in bacterial pneumonia in children in ambulatory settings where the prevalence of bacterial pneumonia is low. (CRP and PCT have limited diagnostic value in severely ill children who meet criteria for pneumonia or sepsis and who are candidates for broad spectrum antibiotic therapy)
- There is growing evidence that antibiotic therapy can be safely withheld in children who are not severely ill with equivocal clinical presentation and low CRP (<20 mg/L) and PCT (<0.5 µg/L) levels

Lower respiratory tract infections (LRTIs) in childhood are commonly of viral aetiology. Distinguishing viral from bacterial LRTI in children—and thus appropriately prescribing antibiotics—solely based on a medical history and physical examination can be challenging.[1] In these circumstances, an accurate marker for bacterial pneumonia would be useful in order to prevent return to medical care (if bacterial infection was not treated) and to avoid antibiotic use and adverse effects (when the underlying cause is viral).

The National Institute for Health and Care Excellence (NICE) recommends point-of-care testing of C reactive protein (CRP) to guide antibiotic therapy for adults with symptoms of LRTI and diagnostic uncertainty after a clinical assessment (antibiotic treatment should be offered to patients with CRP levels >100 mg/L and avoided for CRP levels <20 mg/L).[2] Although CRP and procalcitonin lack sufficient sensitivity and specificity to rule in bacterial pneumonia in children in ambulatory care,[3 4] data generated over the past few years suggest that both biomarkers could help clinicians to reduce diagnostic uncertainty and unnecessary antibiotic prescriptions in a subset of children with LRTI and equivocal clinical features.

HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Testing for C reactive protein (CRP) and procalcitonin (PCT) are available 24 hours a day in our hospital. We sought feedback from parents of a group of children with fever and respiratory symptoms assessed in our emergency department in whom PCT and CRP testing were used in combination with clinical judgment to withhold antibiotics. The clinical scenario presented was elaborated based on these experiences. Interestingly, all the parents believed that antibiotics are overprescribed in acute respiratory infections in children, which led us to emphasise the value of low CRP and PCT concentrations to improve clinical decision making in children with lower respiratory tract infections and diagnostic uncertainty in ambulatory care.

Comparison between C reactive protein and procalcitonin as biomarkers for bacterial infection

	C reactive protein	Procalcitonin
Time to detectable rise	12 hours	3 hours
Time to peak rise	2-3 days	6 hours
Response after antibiotic treatment	Remains elevated for several days	Decreases 24 hours after infectious insult ends
Cost	Inexpensive and cost effective in low income countries	Significantly higher cost, which limits its implementation in low income countries
Serum measurement in hospitals	Widely and commonly available around-the-clock	Not available in many laboratories and during out of hours in some hospitals
Point-of-care testing availability	Widely available in primary care (turnaround time ≤5 minutes)	Mostly available in emergency departments (turnaround time 15-30 minutes)

What are C reactive protein and procalcitonin?

C reactive protein (CRP) and peripheral white blood cell count are the most common biomarkers for infection in clinical practice worldwide. CRP, which is primarily produced by the liver in response to inflammation, plays a major role in inducing complement activation and facilitating phagocytosis by macrophages.[5 6] Procalcitonin (PCT) is a precursor peptide of the hormone calcitonin, which is secreted by a wide range of parenchymal cells in response to systemic inflammation. Although both biomarkers have a good negative predictive value to rule out serious bacterial infections, PCT is increasingly used to identify severe bacterial infections in children such as urinary tract infection and meningitis and to determine the risk of serious bacterial infection in infants with fever of unknown source and oncology patients with neutropenic fever, because it shows a more specific increase in response to bacterial infection, becomes elevated faster, and decreases earlier in response to appropriate antibiotic therapy than CRP (table).[5 7 8] PCT testing is mostly performed in emergency care settings in middle-high income settings because of its higher cost and longer turnaround time than CRP testing; CRP is widely used in primary care, including in some low income countries, because of its affordability and fast turnaround time.[5-8]

The optimal cut-off values for CRP and PCT to rule in or rule out bacterial LRTI in ambulatory care have not been established. Nevertheless, among febrile children assessed in acute care settings with intermediate (5.0-20.0%) to high (>20.0%) prevalence of serious bacterial infections, a CRP value <20 mg/L or a PCT value <0.5 µg/L makes a serious bacterial infection improbable, whereas it should be suspected if the CRP level is >80 mg/L or PCT value is >2 µg/L.[9]

Can CRP and PCT improve diagnosis of bacterial LRTI in children?

PCT and CRP lack diagnostic sensitivity to rule in bacterial (compared with viral) LRTI in children in primary care settings, as the prevalence and pre-test probability of serious bacterial infections is low in this scenario, at least in high income countries.

Studies evaluating the ability of CRP and PCT to predict bacterial pneumonia caused by typical microorganisms in children who present to emergency services found variable sensitivities, ranging from 44.0% to 94.0%, using optimal cut-off values (>1.5 µg/L for PCT and >65 mg/L for CRP).[10-13] However, such high serum concentrations are often observed in patients who are sufficiently ill to require hospitalisation and in whom bacterial pneumonia may be efficiently diagnosed by a typical clinical assessment. In other words, for ill-appearing children who meet traditional clinical criteria for bacterial pneumonia, CRP and PCT at the thresholds that best predict bacterial pneumonia do not seem to provide additional information beyond a comprehensive clinical evaluation. Few studies have compared the diagnostic performance of both biomarkers with clinical diagnosis. For example, in a prospective cohort study with 75 children hospitalised with community acquired pneumonia, including 37 patients with presumed pneumococcal aetiology, PCT ≥1.5 µg/L was 94% sensitive for pneumococcal pneumonia, with a 1.99 positive likelihood ratio. Based on a pre-test probability of 49%, PCT increased post-test probability to 65%.[13] The added clinical value of this post-test probability—that is, the proportion of patients who could benefit from PCT testing—is unclear without knowing the post-test probability of a medical history and physical exam. Further, specificities and positive predictive values for both biomarkers rarely reach 80.0%, indicating a substantial number of viral infections (false positives) among patients with high serum CRP and PCT concentrations.[10-13]

Few studies evaluate the performance of CRP and PCT to predict bacterial pneumonia in children in primary care. A Finnish group measured CRP and PCT in 193 and 190 serum samples of children with radiologically confirmed pneumonia managed in primary care. There were no significant differences in mean CRP and median PCT concentrations among children with serological evidence of pneumococcal infection compared with those with atypical and viral pneumonia. In fact, it was found that mean CRP and median PCT concentrations were <30 mg/L and <0.5 µg/L regardless of the aetiology.[14 15]

RATIONAL TESTING INTO PRACTICE

- Think about how many children with lower respiratory tract infections (LRTI) are prescribed antibiotics due to diagnostic uncertainty in clinical practice. Do you think that point-of-care testing for C reactive protein (CRP) or procalcitonin (PCT) could help optimise antibiotic prescribing in LRTI in children in your practice?
- High serum concentrations of CRP and PCT are often found in seriously ill children with pneumococcal pneumonia assessed as emergency department outpatients. However, what proportion of these patients would be missed by a meticulous clinical assessment?

Can CRP and PCT improve antimicrobial prescribing in children with LRTI in the outpatient setting?

Although most ambulatory children with LRTI do not need antibiotic treatment, there is likely some added clinical value of a low CRP or PCT level to rule out bacterial pneumonia and reduce antibiotic use in well-appearing children in whom the distinction between bacterial and viral LRTI infection is unclear after a thorough clinical assessment. Evidence suggests that PCT <0.5 µg/L can accurately identify adults and children with low risk of typical bacterial pneumonia, particularly *Streptococcus pneumoniae*. For instance, a multicentre, population-based, prospective, active surveillance study that analysed PCT levels in 532 hospitalised children with radiologically confirmed pneumonia found a 96.0% negative predictive value for typical bacteria among 242 children (45.0% of the cohort) with PCT values <0.25 µg/L. In fact, none of the 120 children with PCT values <0.1 µg/L had typical bacteria detected.[16] These and other results suggest that antibiotic therapy can be safely withheld in children who appear well with low PCT levels and equivocal clinical presentation.[7 13 16-18]

Low CRP concentrations may similarly reduce the likelihood of bacterial LRTI and, in turn, reduce unnecessary antibiotic prescribing, but the evidence is more mixed. Currently, point-of-care CRP testing is routinely used in the diagnostic work-up of adults with LRTI in primary care in several high income countries, where low CRP concentrations combined with clinical assessment have successfully reduced antibiotic prescription.[6 19] This benefit has not always been observed in children; this may be related to poor adherence to CRP-guided prescribing guidelines plus an overestimation of the positive predictive value of a moderately elevated CRP level.[20-22] In The Netherlands, for example, where national guidelines on the management of LRTI are similar to NICE guidelines,[23] a trial that randomly allocated 309 non-seriously ill children aged 3 months to 12 years with fever and cough from 28 primary practices to receive either clinical assessment plus point-of-care CRP testing or clinical assessment only, did not find a significant difference in antibiotic prescription rates between both groups. Notably, among 170 children who had CRP measured, only 4% had CRP >100 mg/L. However, 14.0% with CRP <10 mg/L and 44.0% with CRP between 10 and 100 mg/L had antibiotics prescribed, suggesting an overprescription of antibiotics in a fraction of patients with low and intermediate CRP values.[22]

By contrast, a study performed in nine primary care practices in Tanzania enrolled 1726 non-seriously ill febrile children aged 2-59 months with cough, who were randomly allocated to two groups. The intervention group received antibiotic treatment based on sequential use of the World Health Organization clinical criteria to define childhood pneumonia (tachypnoea and chest indrawing) and point-of-care CRP testing. Patients meeting the clinical criteria plus a CRP >80 mg/L were deemed to have a bacterial LRTI and had oral antibiotics prescribed (20/865 patients; 2.3%). The control group was treated with antibiotics based on clinical criteria only (345/854 patients; 40.4%). Notably, antibiotic prescription was almost 20-fold lower in the intervention group (risk ratio 0.06, 95% confidence interval 0.04 to 0.09) and secondary hospital admissions and deaths were also significantly lower compared with the control group (risk ratio 0.30, 0.10 to 0.93).[24]

Both biomarkers can be used to reduce unnecessary antibiotic exposure in well-appearing children

While CRP and PCT lack sensitivity definitively to diagnose bacterial LRTI, there is growing evidence that both biomarkers can be used to reduce unnecessary antibiotic exposure in well-appearing children in whom the distinction between bacterial and viral LRTI is not possible after a thorough clinical assessment in the outpatient setting.

Case outcome

As the patient was clinically stable and his PCT level was low, his mother was reassured that he probably had a viral infection that would not benefit from antibiotic treatment. Consequently, the child was discharged home without antibiotics. A follow-up visit three days later with his general practitioner showed that he had been completely apyrexial for the past 24 hours and was feeding better. No further follow-up was advised.

Competing interests: None declared

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SPOT DIAGNOSIS

An unusual presentation of prolonged delirium

A woman in her 20s had a three week history of acute headaches, slurred speech, and unusual behaviour.

Neuropsychiatric symptoms were prominent, including confusion, confabulation, labile affect, persecutory beliefs, agitation, and aggression. No neurological deficits were present, her visual fields were normal, and she had no history of seizures.

Over the three weeks, her management had included: admission to neurology and discharge home; admission to psychiatry under the Mental Health Act and transfer back to neurology before discharge home again; and readmission to psychiatry under the act.

Six months earlier she was investigated for hirsutism by her general practitioner: androgen levels were raised but pelvic ultrasonography did not show polycystic ovaries.

Moderate psychosocial stressors were present. She took no medication, had no psychiatric or substance misuse history, and had no relevant family history.

Routine delirium screen—urinalysis, chest radiography, electrocardiogram, a computed tomography head scan, and blood tests (full blood count, urea and electrolytes, blood glucose, liver function tests, C reactive protein, thyroid function, calcium levels, and haematinics)—and physical observations were all within normal limits, aside from a slightly low potassium level. Normal electroencephalogram on video telemetry ruled out non-convulsive status epilepticus.

Magnetic resonance imaging (MRI) of the head is shown in the figure. Other relevant test results are included in the table.

What is the diagnosis?

Submitted by Richard Burne, Russell Birkett, William Bennet, and Abhi Shetty (Abhijeeth.Shetty@shsc.nhs.uk)

Patient consent obtained.

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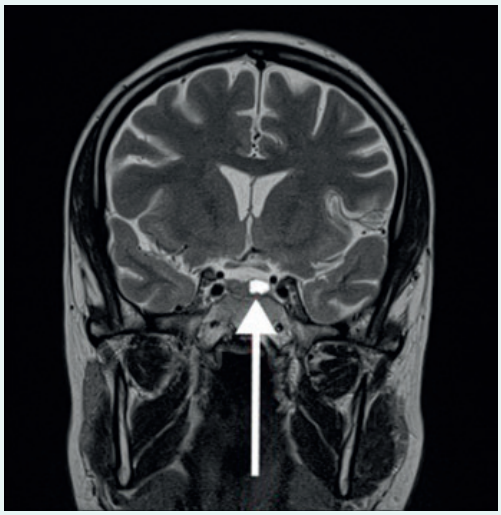

T2 coronal MRI of head showing an 8 mm hyperintense lesion (white arrow) in the anterior pituitary with normal brain parenchyma

Relevant test results

Test	Result	Normal range
Sex hormone binding globulin	27.6 nmol	32.4-128 nmol
Testosterone	2.8 nmol/L	0.3-1.7 nmol/L
Potassium	3 mmol/L	3.5-5.3 mmol/L
White cell count	9.4×10^9/L	$3.5\text{-}9.5 \times 10^9$/L
C reactive protein	4.2 mg/L	0-5 mg/L
Adrenocorticotrophic hormone	91.1 ng/L	at 9 am: ‹46 ng/L
Dehydroepiandrosterone sulphate	15.4 µmol/L	1.8-10.3 µmol/L
Androstenedione	6.2 nmol/L	0-10.3 nmol/L
Post-overnight dexamethasone suppression test cortisol	884 nmol/L	‹50 nmol/L
24 hour urinary cortisol	9448 nmol/24 h	0-165 nmol/24 h
Other pituitary hormones	Within normal range	

answers

SPOT DIAGNOSIS **An unusual presentation of prolonged delirium**

Cushing's disease—a specific form of Cushing's syndrome where raised levels of cortisol are secondary to a pituitary microadenoma producing excess adrenocorticotrophic hormone (ACTH)—was diagnosed on the tetrad of an unsuppressed post-overnight dexamethasone suppression test plasma cortisol, elevated 24 hour urine cortisol, raised levels of plasma ACTH, and the 8 mm hyperintense anterior pituitary lesion on MRI (figure).

Hirsutism, from the stimulating effect of ACTH on adrenal production of dehydroepiandrosterone sulphate and its peripheral transformation to testosterone, is a sign of Cushing's syndrome.

Hypokalaemia results from excessive cortisol stimulation of mineralocorticoid receptors.

The main differential, ectopic ACTH syndrome, is uncommon at this age; further investigation could have included whole body computed tomography for an ectopic ACTH producing lesion, and inferior petrosal sinus sampling.

Hypercortisolism with neuropsychiatric symptoms is a life threatening emergency requiring management from endocrinologists, neurosurgeons, liaison psychiatrists, and nurses. It is typically associated with severe hypercortisolism.

LEARNING POINTS

- Cushing's syndrome can present with prominent neuropsychiatric symptoms without obvious physical manifestations.
- Cushing's syndrome with neuropsychiatric symptoms is an endocrine emergency and requires urgent specialist input.

PATIENT OUTCOME

Multidisciplinary work between endocrinology, neurosurgery, and liaison psychiatry with tailored multi-component care, was required to manage the patient's safety and agitation while she awaited surgery.

Trans-sphenoidal endoscopic adenomectomy was successful.

CPD READING
0.5 HOURS

You can record CPD points for reading any article. We suggest half an hour to read and reflect on each.

LEARNING MODULE

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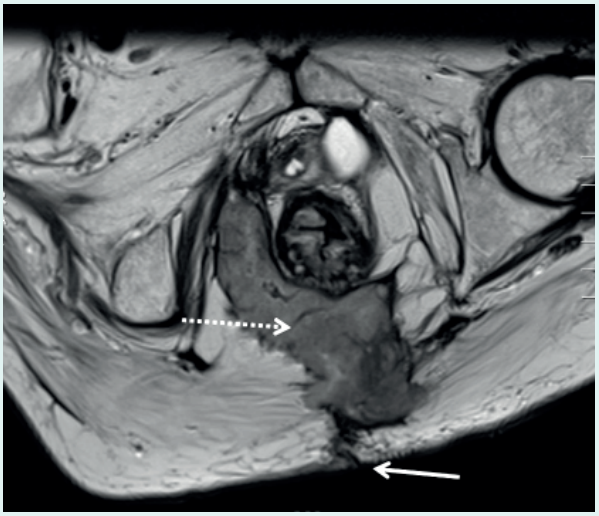
MINERVA

A rare complication of recurrent pressure ulcers



This is a magnetic resonance image (MRI) showing a squamous cell carcinoma of the sacral area of a man in his 60s. He had been paraplegic for 40 years and had been troubled with recurrent sacral pressure ulcers that required surgery six years previously.

He presented with persistent discharge from the ulcer, progression despite compliance with wound management, raised inflammatory markers, and a new anaemia (haemoglobin 81 g/dL). MRI revealed a mass deep to the natal cleft, extending into the right ischioanal fossa (dotted arrow) suggestive of squamous cell carcinoma and computed tomography showed distal metastasis. Biopsy of the lesion (solid arrow) confirmed squamous cell carcinoma.

Squamous cell carcinoma can develop in previously damaged or chronically inflamed skin; the exact pathogenesis is unknown. Although development in pressure ulcers is rare (incidence ‹ 0.5%), consider biopsy and imaging in non-healing, progressing, or recurrent wounds to rule out an underlying cause.

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Patient has died. Consent obtained from relatives.

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The value of a human life

It is impossible to put a monetary price on a human life, yet that's just what governments and institutions, both public and private, are obliged to do to balance competing demands for safety, convenience, and profit. An article in the *NYRB* argues that we don't price a life highly enough and that, as a consequence, deaths from injury, preventable illness, and other avoidable causes are commoner than they should be (https://www.nybooks.com/articles/2021/06/10/what-price-is-right-human-life).

Uterine fibroids

What causes the development of fibroids is largely unknown. One idea is that reproductive tract infections are involved. Even if this is correct, herpes simplex virus type 2 looks an unlikely candidate. In a large community based cohort of African American women who had repeated ultrasound examinations no association was seen between HSV-2 seropositivity and the incidence of fibroids (*Am J Epidemiol* doi:10.1093/aje/kwab160).

Recent mortality in the UK

During the decade to 2010, standardised mortality rates in the UK declined at the fastest rate since records began in 1841. By contrast, changes over the following decade 2011-19 were the smallest for 70 years. The policies of austerity pursued by the UK government are sometimes blamed, but little evidence supports this. Similar trends occurred in most European Union countries and in the US. And the downturn in the UK affected young and old, women and men, and the more and the less advantaged to much the same extent (*Age Ageing* doi:10.1093/ageing/afab016).

Tranexamic acid for epistaxis

Tranexamic acid inhibits fibrinolysis and stabilises blood clots, so one might expect it to help in the treatment of epistaxis. A controlled trial in UK emergency departments randomly allocated 500 people with spontaneous epistaxis that persisted after first aid and the application of a topical vasoconstrictor either to receive topical tranexamic acid or placebo (*Ann Emerg Med* doi:10.1016/j.annemergmed.2020.12.013). Disappointingly, the need for anterior nasal packing was no lower in the group getting the active treatment.

Stroke after preterm delivery

Women who have a preterm delivery are at increased risk of both haemorrhagic and ischaemic stroke, according to a longitudinal study from Sweden. Compared with women who had full term deliveries, women with preterm deliveries had a 60% higher risk of having a stroke during the 20 years after delivery. A smaller but still increased risk persisted beyond that (*Circulation* doi:10.1161/CIRCULATIONAHA.120.052268). Women who had extremely preterm deliveries had the highest risk of stroke.

Diabetic ketoacidosis in children during the pandemic

The number of children admitted to Finnish intensive care units with diabetic ketoacidosis caused by new onset diabetes increased threefold during the pandemic. Not every child was tested but, among those who were, all were negative for SARS-CoV-2 antibodies. The rise in admissions to intensive care units was probably a result of diagnostic delay rather than a direct effect of the virus (*Arch Dis Child* doi:10.1136/archdischild-2020-321220).

Fruit and insulin resistance

A longitudinal study of middle aged Australians reports that people who ate lots of fruit had lower fasting insulin levels and greater insulin sensitivity when they were tested at the time of recruitment. Over five years' follow-up, those who ate two or more servings of fruit per day had a 36% lower risk of developing type 2 diabetes than those who consumed less than half a serving (*JCEM* doi:10.1210/clinem/dgab335). At 12 years, however, the protective effect of fruit had vanished.

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