CASE REPORT

Meningococcal serogroup W135 epiglottitis in an adolescent patient

Daniela Beltrami,¹ Pierre Guilcher,² David Longchamp,¹ Pierre Alex Crisinel¹

¹Woman-Mother-Child, Lausanne University Hospital, Lausanne, Switzerland
²ENT and Neck-Facial Surgery, Lausanne University Hospital, Lausanne, Switzerland

Correspondence to
 Dr Pierre Alex Crisinel,
 pierre-alex.crisinel@chuv.ch

Accepted 20 February 2018

SUMMARY

Acute epiglottitis is a severe and potentially life-threatening condition. Since the implementation of *Haemophilus influenzae* vaccination, the number of cases of epiglottitis has decreased and the proportion of other infectious causes has increased. We report a case of acute epiglottitis in a teenager caused by *Neisseria meningitidis*, an unusual pathogen.

BACKGROUND

Neisseria meningitidis (*Nm*) is not a well-recognised cause of epiglottitis. We think that this rare clinical presentation of meningococcal infection could increase in frequency due to the increasing incidence of serogroup W135 infections. The non-identification of *Nm* as the cause of an epiglottitis could have public health implications.

CASE PRESENTATION

We report the case of a 14-year-old, healthy male adolescent who presented with 4 days of sore throat, dysphagia and increasing dysphonia. He was originally from Jordan but had lived in Switzerland for 6 years and had no recent travel history. He was fully immunised according to the Swiss vaccination plan except for conjugate meningococcal C vaccine. He was a non-smoker. On admission, he had 39°C fever, but normal vital signs. Physical examination revealed anterior neck pain; lateral limitation on mobilisation, but no stiffness; and multiple bilateral adenopathy, but no cervical oedema nor skin inflammation. Intrabuccal examination revealed pharyngitis and a muffled voice. Uvula and tonsils were normal and there was no trismus.

INVESTIGATIONS

He was initially diagnosed with viral pharyngitis and admitted for supportive care. Blood tests revealed a white blood cell count of $13.2 \times 10^9/L$ with neutrophil predominance (94%) and a C reactive protein of 169 mg/L. After a few hours of hospitalisation, he developed respiratory distress with stridor, drooling secretions and intercostal indrawing. We considered a croup, an atypical pseudo-croup or a bacterial tracheitis, in our differential diagnosis. He received four adrenalin inhalations and intravenous corticosteroids, without clinical improvement. Intravenous ceftriaxone was also started after sampling blood cultures. He was then transferred to our paediatric intensive care unit, where direct laryngoscope examination revealed supraglottic inflammation with

oedema including the epiglottis, aryepiglottic folds and arytenoids, compatible with epiglottitis. Intubation was performed using rigid bronchoscope to secure the airway.

The peripheral anaerobic blood culture turned out positive in 24 hours for *Nm*. Bronchial aspirations sampled during bronchoscopy, and after the start of antibiotics, revealed no pathological bacteria on culture. However, PCR of the bronchial aspirations was positive for *Nm* at 91 500 copies/mL. Further analysis could classify the bacterium as a serogroup W135 (MenW). No lumbar puncture was done as no meningeal signs were present.

OUTCOME AND FOLLOW-UP

On day 2, nasofibrosopic control showed reduced supraglottic oedema, and the patient could be extubated on day 3 and discharged home after 10 days of intravenous ceftriaxone (2 g/day). Family members and close contacts were given recommended post-exposure prophylaxis with ciprofloxacin 500 mg as single dose. The investigation of a terminal complement deficiency was negative. Our patient did not have any personal nor familial history of severe infection.

DISCUSSION

Historically, epiglottitis occurred mainly in young children and was essentially due to infection with *Haemophilus influenzae* type b (*Hib*). After the advent of conjugated *Hib* vaccine, we observed an important reduction in the number of cases in children and a subsequent change in patients' characteristics and microbiological aetiologies. Apart from *Hib*, the most reported pathogens are *Streptococcus pneumoniae*, *S. aureus*, *H. parainfluenzae*, groups A, B, C and G *Streptococci*, *Pseudomonas aeruginosa* and untypable *Hib*.¹ Between 2009 and 2012, only 19 cases of *Hib* epiglottitis were reported in the UK. Only five of them (26%) were in patients under 20 years of age.¹

Nm is a Gram-negative diplococcus bacterium that is well known for causing invasive meningococcal disease (IMD), such as sepsis, purpura fulminans or meningitis. Other less virulent manifestations of meningococcal infections are well described. *Nm* can also cause pneumonia, arthritis, pericarditis, pharyngitis and conjunctivitis. Epiglottitis is reported much less often. We could identify only nine individual case reports of meningococcal epiglottitis exclusively in adult patients (37–95 years old), published between 1995 and 2012.^{2–10} Four of these patients

To cite: Beltrami D, Guilcher P, Longchamp D, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-223038

were diabetic and six of them required airway interventions, as did our patient. Five patients were infected with MenY, two with MenB, one with MenC and one with an unknown serogroup. All recoveries were uneventful. To the best of our knowledge, we present here the first case report of a meningococcal epiglottitis in an adolescent. However, among 129 MenW cases diagnosed in UK between 2010 and 2013, Ladhani *et al* described five cases (4%) of epiglottitis/supraglottitis.¹¹ One of these patients was less than 5 years old, while the other four were older than 20 years. Those cases were due to the endemic expansion of a single clone of MenW. Interestingly, other rare manifestations also appear to be more frequent with this clone, as 12% (n=15) and 7% (n=9) of patients presented with pneumonia and septic arthritis, respectively.

In Switzerland, the annual incidence of IMD varies between 0.7 and 1.2 cases per 100 000 inhabitants. The two most frequent serogroups are now MenB and MenW135 (35% each in 2015), following the fall of MenC cases (10% in 2015) and increase of MenW cases. The proportion of MenW in Switzerland was only 4% from 2001 to 2010. In the recent years, however, this serogroup followed an important expanding trend from 7% in 2013, to 35% in 2015. We do not know if the strain that infected our patient is related to the UK clonal strain and could have favoured this unusual presentation as an epiglottitis.

Learning points

- ▶ Epiglottitis is a very rare manifestation of meningococcal infection.
- ▶ The serogroup W135 probably favoured this clinical picture.
- ▶ The increasing incidence of W135 may contribute to the increase in the probability of *Neisseria meningitidis* as a cause of epiglottitis.
- ▶ The identification of such bacteria may have public health implications, as secondary and more severe cases may occur.

Contributors All authors contributed to the manuscript as follows: PAC and DB: conception, design, drafting the article. PG and DL: revising it critically. PAC: final approval of the version to be published. All authors read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Parental/guardian consent obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2018. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- 1 Collins S, Ramsay M, Campbell H, *et al*. Invasive Haemophilus influenzae type b disease in England and Wales: who is at risk after 2 decades of routine childhood vaccination? *Clin Infect Dis* 2013;57:1715–21.
- 2 Sarwar U, Akhtar N, Hemming J, *et al*. A new era in supraglottitis? An isolated UK case of supraglottitis secondary to *Neisseria meningitidis*. *J Laryngol Otol* 2011;125:1206–8.
- 3 Richardson DK, Helderan T, Lovett PB, *et al*. Meningococcal epiglottitis in a diabetic adult patient: a case report. *J Emerg Med* 2012;43:634–6.
- 4 Kortepeter MG, Adams BL, Zollinger WD, *et al*. Fulminant supraglottitis from *Neisseria meningitidis*. *Emerg Infect Dis* 2007;13:502–4.
- 5 Schwam E, Cox J. Fulminant meningococcal supraglottitis: An emerging infectious syndrome? *Emerg Infect Dis* 1999;5:464–7.
- 6 Mattila PS, Carlson P. Pharyngolaryngitis caused by *Neisseria meningitidis*. *Scand J Infect Dis* 1998;30:198–200.
- 7 Sivalingam P, Tully AM. Acute meningococcal epiglottitis and septicaemia in a 65-y-old man. *Scand J Infect Dis* 1998;30:196–8.
- 8 Donnelly TJ, Crausman RS. Acute supraglottitis: when a sore throat becomes severe. *Geriatrics* 1997;52:65–6.
- 9 Nelson K, Watanakunakorn C, Watkins DA. Acute epiglottitis due to serogroup Y *Neisseria meningitidis* in an audit. *Clin Infect Dis* 1996;23:1192–3.
- 10 Crausman RS, Pluss WT, Jennings CA. Acute epiglottitis in the adult caused by *Neisseria meningitidis*. *Scand J Infect Dis* 1995;27:77–8.
- 11 Ladhani SN, Beebejaun K, Lucidarme J, *et al*. Increase in endemic *Neisseria meningitidis* capsular group W sequence type 11 complex associated with severe invasive disease in England and Wales. *Clin Infect Dis* 2015;60:578–85.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow