



Implementation of an acute tonsillitis management protocol within a clinical decisions unit

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ABSTRACT

Introduction With tonsillectomy surgery subject to increasingly strict commissioning criteria over the past 20 years in the UK, the total number of admissions for acute tonsillitis has been rising steadily. Multiple single-centre studies have demonstrated how introduction of a standardised management protocol can be effective in improving the delivery of treatment for acute tonsillitis in the emergency department.

Methods Using a novel approach, we aimed to implement an acute tonsillitis management protocol within a formal clinical decisions unit (CDU) pathway. Following a retrospective baseline audit, we carried out two post-intervention cycles of data collection to assess safety and efficacy.

Results The median number of initial treatments increased significantly from two of five at baseline, to three of five in both the first ($U=86$, $p=0.004$) and second ($z=2.959$, $p=0.003$) audit cycles. Admission rate was reduced from 0.79 to 0.44 in the first cycle, representing a 44.6% relative risk reduction [95% confidence interval (CI) 0.304–1.012; $p=0.0547$]. Admission rate remained reduced at 0.48 in the second cycle, with a relative risk reduction of 39.2% compared with baseline (95% CI 0.380–0.972; $p=0.038$).

Conclusions Utilisation of the CDU led to an improvement in the delivery of initial treatment, an extended period of observation and subsequently a greater percentage of patients being discharged. An acute tonsillitis management protocol within a CDU appears to be a safe and effective model and is now standard practice in our hospital.

KEYWORDS

Tonsillitis – Quality improvement – Clinical decisions unit

Accepted 21 January 2021

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Introduction

Acute tonsillitis is a common cause of presentation to both primary care and the emergency department (ED), and accounts for a significant proportion of inpatient admissions to ear, nose and throat (ENT) units. The total number of admissions is rising each year in the UK; in 2018–2019 more than 78,000 patients were admitted with this diagnosis, compared with approximately 60,000 in 2011–2012.¹ This generates a substantial workload and financial burden for a health service that is already under extreme pressure.

The Portsmouth Tonsillitis Protocol is a treatment algorithm, developed in 2013 by Bird *et al*, that has been shown to be effective in improving the delivery of treatment for acute tonsillitis in the ED and significantly reduces both rate and duration of admission.² The evidence-based protocol³ advocates early aggressive initial medical treatment followed by a period of observation, before reassessment for suitability for early discharge and further outpatient treatment. Since its publication, multiple single-centre studies have reported successful outcomes after introducing similar management protocols in their institutions.^{4–6}

We aimed to implement an acute tonsillitis management protocol in our district general hospital, adapted to be part of a formal clinical decisions unit (CDU) pathway. We hoped that this novel approach would facilitate the delivery of treatment and reassessment while negating the time constraints of the ED. We aimed to assess the safety and efficacy through a two-cycle audit.

Methods

We first carried out a retrospective audit of all adult patients presenting to the ED with a new diagnosis of tonsillitis over an 11-week period (April–July 2019). We reviewed the outcome from the initial consultation: whether a patient was deemed fit for discharge and outpatient management, or if they required a trial of treatment and potential admission. In those who had a trial, we reviewed which treatments were given and the rate of hospital admission. Length of admission and incidence of readmission within 30 days were recorded.

Our local acute tonsillitis management protocol (Figure 1) was developed based on the Portsmouth

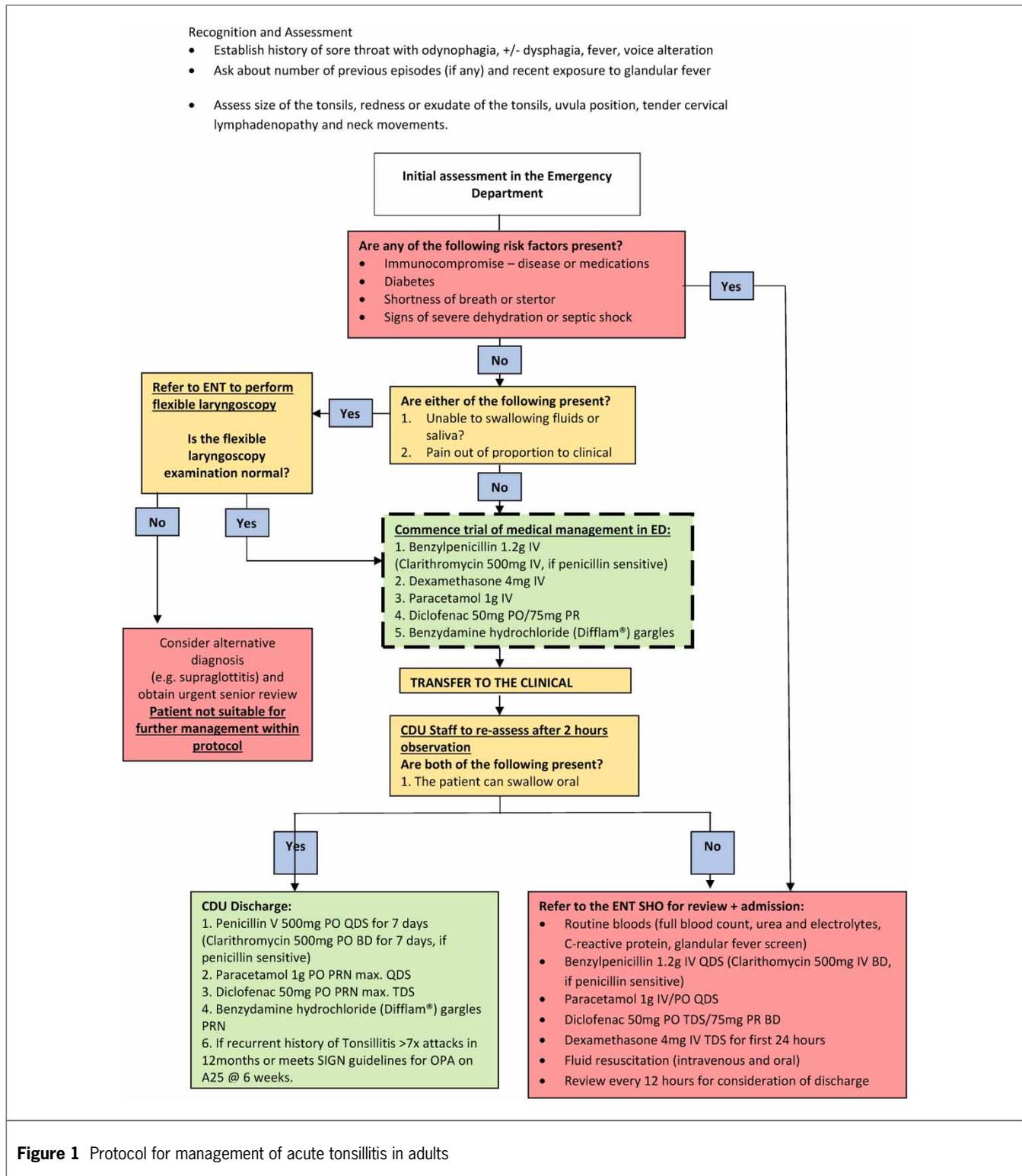


Figure 1 Protocol for management of acute tonsillitis in adults

Tonsillitis Protocol⁵, adapted into a formal CDU pathway and to include a section on ‘Recognition and Assessment’ incorporating current National Institute for Health and Care Excellence (NICE) guidelines.⁷ It was hoped this

would assist clinicians and ensure it was initiated for suitable patients. Patients under the age of 18 and those able to take oral medications at presentation were excluded.

Our CDU is a fully equipped ward area adjacent to the ED that is not subject to the same strict time constraints. Patients can be transferred to CDU if they meet the criteria for a condition-specific pathway. Prior to introduction, the full protocol and CDU pathway were distributed to all doctors within the emergency and ENT departments. The protocol was included in the clinical induction and uploaded to the Trust intranet for easy access and reference.

The first post-intervention data collection cycle took place over an 11-week period (July–October 2019). We then carried out a supporting intervention in the form of a focused teaching session given to the ED doctors. A second data collection cycle was completed over an 8-week period (February–April 2020).

Statistical analysis was carried out with RStudio (v1.2.5042, RStudio Inc, Boston, MA, USA) using Mann–Whitney *U* test, Student's *t* test, and relative risk ratios (significance achieved at $p < 0.05$). This study is reported using the SQUIRE guideline.

Results

During the baseline audit, 92 adult patients presented to the ED with tonsillitis. Seventy-two patients were deemed fit for outpatient management with oral antibiotics. Nineteen patients (8 men, 11 women, mean age 28.1 years) required a trial of treatment in the

department and, as we had no formal pathway for reassessment, all were referred for specialty review. All 19 patients would have been suitable for management using the protocol and CDU pathway.

During the first post-intervention cycle, 94 patients presented with tonsillitis. Seventy-five were well enough at presentation for outpatient management, and 19 patients (7 men, 12 women, mean age 27.3 years) were suitable for the management protocol. In the second cycle, 51 patients presented with tonsillitis. Twenty-four were suitable for outpatient management and 27 patients (10 men, 17 women, mean age 26.4 years) were deemed suitable for the tonsillitis management pathway.

The median number of initial treatments given increased significantly from two of five at baseline (Table 1), to three of five in the first ($U = 86$, $p = 0.0036$) and second cycles ($z = 2.959$, $p = 0.0031$).

Admission rate was reduced from 0.79 to 0.44 in the first cycle (Table 2), representing a 44.6% relative risk reduction [95% confidence interval (CI) 0.304–1.012; $p = 0.0547$]. Admission rate remained reduced at 0.48 in the second cycle, with a significant relative risk reduction of 39.2% compared with baseline (95% CI 0.380–0.972; $p = 0.058$). At 30-day follow-up no patients from any period had re-represented or required readmission.

Mean length of admission was 28.22 h (SD 18.6) at baseline, 28.20 h (SD 11.8, $t = -0.002$, $p = 0.4992$) in the first cycle and 26.49 h (SD 12.6, $t = -0.717$, $p = 0.24$) in the second.

Table 1 The effect of implementation of the acute tonsillitis management protocol on the delivery of initial treatment

Treatment	Baseline <i>n</i> (%)	Post-intervention 1 <i>n</i> (%)	Post-intervention 2 <i>n</i> (%)
Intravenous dexamethasone	16/19 (84)	19/19 (100)	23/25 (92)
Intravenous antibiotics	18/19 (95)	18/19 (95)	25/25 (100)
Intravenous paracetamol	8/19 (42)	13/19 (68)	20/25 (80)
NSAID	3/19 (16)	11/19 (58)	11/25 (44)
Diffiam	1/19 (5)	4/19 (21)	4/25 (16)
Median total number	2/5	3/5*	3/5*

NSAID = non steroidal anti-inflammatory drug
* $p < 0.05$

Table 2 The effect of implementation of the acute tonsillitis management protocol on the rate and length of inpatient admission

	Baseline	Post-intervention 1	Post-intervention 2
Admitted	15	7	12
Discharged	4	9	13
Admission rate	0.79	0.44	0.48
Relative risk	–	0.554	0.608*
Length of admission (h)	28.22	28.20	26.49

* $p < 0.05$

All patients in the baseline period were referred to and seen by the ENT on-call team. Only three patients (15.8%) had some form of post-treatment reassessment prior to the decision to admit.

Despite not meeting any exclusion criteria, three patients in the first cycle and two in the second cycle were admitted immediately after an initial assessment by the on-call ENT team. Of the remaining 16 patients in the first cycle, eight (50%) were transferred to CDU before reassessment, after which 62.5% were discharged. Three of these patients were reassessed and discharged by ED doctors. Of the eight who remained in the ED for reassessment, 50% were discharged. Mean time to reassessment was 190.5 min in the CDU and 106.3 min in the ED.

Of the remaining 25 patients in the second cycle, 14 (56%) were transferred to CDU before reassessment, after which 57.1% were discharged. Two of these patients were reassessed and discharged by ED clinicians. Of the 11 patients who remained in the ED for reassessment, 36.4% were discharged. Mean time to reassessment was 151 min in the CDU and 69 min in the ED.

Discussion

With tonsillectomy surgery subject to increasingly strict commissioning criteria over the past 20 years in the UK, the total number of admissions for acute tonsillitis has been rising steadily.⁸ It is of increasing importance to seek safe alternatives to admission and reduce the burden on NHS resources and inpatient capacity.

We have demonstrated that implementation of an acute tonsillitis management protocol incorporated within a formal CDU pathway can lead to both a significant improvement in the delivery of initial therapy and a reduction in the rate of admission.

We believe that utilising the CDU in the management of acute tonsillitis is key. In our study it facilitated an extended period of observation following administration of the initial therapy, allowing time for the medication to have an effect and a greater percentage of patients to subsequently be discharged. On multiple occasions the reassessment and discharge were carried out by ED clinicians in the CDU. This highlights how the pathway can also reduce the burden on the ENT on-call team, allowing select patients to be safely managed without direct specialist involvement.

Our study findings are similar to those originally reported by Bird *et al*;² however, where they also found a significant reduction in the length of admission, we found this to be unchanged. This is perhaps not particularly surprising as although the protocol appeared to be effective for identifying patients suitable for early discharge, once a patient had been admitted the next review would typically take place on the ward round the following day.

Although our early results were promising, an ongoing obstacle with our model is how to ensure the pathway is implemented in full for every suitable patient. In the first cycle only 50% of patients were actually transferred to the CDU, increasing to 56% in the second cycle. In both cycles a small number of patients were admitted without reassessment, when they would have been suitable for transfer to the CDU. Maintaining awareness and familiarity with the pathway is a challenge, as both the ENT and ED departments have a relatively high turnover and change of personnel as doctors rotate.

Conclusion

An acute tonsillitis management protocol within a CDU appears to be a safe and effective model and is now standard practice in our hospital. Creating a sustained change in practice will require an ongoing proactive approach to education with repeated audit of the service.

References

1. Department of Health. Hospital Episode Statistics 2018-2019. <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2018-19> (cited May 2020).
2. Bird J, Biggs T, Schulz C *et al*. Implementation of an evidence-based acute tonsillitis protocol: our experience in one hundred and twenty-six patients. *Clin Otolaryngol* 2013; **38**: 381-442.
3. Bird J, Biggs T, King E. Controversies in the management of acute tonsillitis: an evidence-based review. *Clin Otolaryngol* 2014; **39**: 368-374.
4. Perkins C, Ray Brown F, Pohl K *et al*. Implementing a guideline for acute tonsillitis using an ambulatory medical unit. *J Laryngol Otol* 2019; **133**: 386-389.
5. Ashman A, Harris R. Outpatient management of patients with acute tonsillitis and peritonsillar abscess in ninety adult patients. *Clin Otolaryngol* 2016; **42**: 720-723.
6. Mohammed H, Jin X, Masterson L, Wickstead M. Ambulant management of acute tonsillitis in adult patients, a study of 330 patients. *Clin Otolaryngol* 2017; **42**: 897-901.
7. National Institute for Health and Care Excellence. Sore throat (acute): anti-microbial prescribing (NICE Guideline 84). <https://www.nice.org.uk/guidance/ng84/documents/guidance>
8. Lau A, Upile N, Wilkie M *et al*. The rising rate of admissions for tonsillitis and neck space abscesses in England, 1991-2011. *Ann R Coll Surg Engl* 2014; **96**: 307-310.