

Available online at www.sciencedirect.com

ScienceDirect

The Surgeon, Journal of the Royal Colleges
of Surgeons of Edinburgh and Irelandwww.thesurgeon.net

A study to investigate changes in the microbiology and antibiotic sensitivity of head and neck space infections

Samir Farmahan*, Dery Tuopar, Phillip J. Ameerally

Oral and Maxillofacial Department, Northampton General Hospital, Cliftonville, Northampton NN1 5BD, England, UK

ARTICLE INFO

Article history:

Received 1 November 2013

Received in revised form

20 December 2013

Accepted 25 February 2014

Available online 27 April 2014

Keywords:

Changes

Microbiology

Antibiotic

Sensitivity

Head

Neck

Infections

ABSTRACT

Background and objectives: Due to a growing concern regarding antibiotic resistance, we aim to investigate if there has been a change in the microbiology and antibiotic sensitivity of head and neck space infections over the last 30–40 years.

Patients and method: A retrospective study was undertaken of 100 patients admitted for inpatient management of head and neck infections. A literature search of the data from the last 30–40 years was performed for comparative purposes.

Results: There were 57 male and 43 female patients (average age 37 years). The most common infections were of odontogenic (67) and skin (14) origin. The submandibular (69%) and buccal (60%) spaces were more commonly involved. Sixty-six cases had multiple space involvement. Seventy-eight cases had swabs taken for microbiology culture and sensitivity, with 67 (85.9%) having microorganisms isolated. Fifty (74.6%) of these were aerobic infections and 17 (25.4%) anaerobic. Bacteria were isolated in 64 (95.5%) cultures. 70.1% of the bacteria were gram positive. Gram-positive cocci were isolated in 65.4% of cultures. The most common bacteria isolated were streptococcus. 73.4% of the bacteria were sensitive to amoxicillin and 81.3% sensitive to both amoxicillin and metronidazole. 15.6% were resistant to penicillin, which were *Staphylococcus aureus* from skin infections.

Conclusion: Comparing our results with a review of the literature shows no significant change in the microbiology and antibiotic sensitivity of odontogenic head and neck infections over the last 30–40 years. Amoxicillin is still shown to be an effective empirical drug for odontogenic head and neck infections.

© 2014 Royal College of Surgeons of Edinburgh (Scottish charity number SC005317) and Royal College of Surgeons in Ireland. Published by Elsevier Ltd. All rights reserved.

* Corresponding author. 14 Myrtle Avenue, Bedfont, Middlesex TW14 9QU, UK. Tel.: +44 07824811360.

E-mail address: Farmahan_1@msn.com (S. Farmahan).

<http://dx.doi.org/10.1016/j.surge.2014.02.006>

1479-666X/© 2014 Royal College of Surgeons of Edinburgh (Scottish charity number SC005317) and Royal College of Surgeons in Ireland. Published by Elsevier Ltd. All rights reserved.

Introduction

The practice of using antimicrobial agents to treat bacterial infections has been in practice for the last 70 years, yet bacteria probably evolved around 3.5 billion years ago.¹

Head and neck space infections have affected mankind since recorded history. Remains of early Egyptians have been discovered with signs of dental abscesses and evidence suggesting osteomyelitis.² In 1928, Sir Alexander Fleming observed that colonies of the bacterium *Staphylococcus aureus* could be destroyed by the mold penicillin notatum. The routine use of penicillin did not begin until the 1940s when Howard Florey and Ernst Chain developed a powdery form of the antibiotic. The discovery of penicillin significantly changed the management of head and neck infections.³

Just after drug companies began mass-producing penicillin in 1943, antibiotic resistant microorganisms began to develop. To combat penicillin resistant, synthetic antibiotics have been synthesised, however resistance has also developed to these newer drugs.²

Head and neck infections affect the visceral spaces and their contents.⁴ Although the prevalence of head and neck space infections has decreased since antimicrobial drugs became available, these infections continue to be a cause of significant morbidity and mortality.^{5–7} In addition to the systemic toxicity, more serious sequelae such as life threatening airway obstruction, mediastinitis, pericarditis, internal jugular vein thrombosis, epidural abscess and carotid artery erosion may result.^{8–10}

Due to a well published growing concern regarding antibiotic resistant, we aim to investigate if there has been a change in the microbiology and antibiotic sensitivity of head and neck space infections over the last 30–40 years.

Materials and methods

A retrospective study was undertaken of 100 patients admitted for inpatient management of head and neck space infections from April 2011 to March 2013 at Northampton General Hospital.

Patient demographics reviewed were age, gender, smoking status, associated medical conditions, source of infection, involved facial space(s), antibiotics administered, previous antibiotic treatment, length of stay in hospital, the microbiology identified and its sensitivity/resistance, and complications encountered. A literature search of the data from the last 30–40 years was performed for comparative purposes.

Results

There were 57 male and 43 female patients ranging in age from 1 to 95 years, with a mean age of 37. 54% of the patients were smokers. 17% were immunocompromised, with 70.1% of these suffering from diabetes. 16% of the patients had a drug allergy, with penicillin being the most common (75%). The average delay in presentation from onset was 4.8 days to A&E, and 3 days to either a general dental practitioner (GDP) or

general medical practitioner (GMP). 63% of referrals were from A&E, 20% from GDPs and 17% from GMPs.

67% of the infections were of odontogenic origin and 14% from the skin (Table 1).

34% of patients presented with a single facial space abscess. The submandibular space was the most frequent space for a single space abscess (55.9%), followed by the buccal space (38.2%) (Table 2).

66% of patients presented with multiple space involvement, totalling 138 spaces. The submandibular space (75.8%) was the most frequent space, followed by the buccal space (71.2%) and sublingual space (16.7%) (Table 2).

Forty-four patients received previous oral antibiotic treatment before presenting to the hospital, either from their GDP or GMP. The average length of the course of antibiotics taken before presentation to A&E was 4 days.

During in-patient stay, 38 patients were given a single antibiotic intravenously, and the remaining 62 were given a combination of antibiotics. Co-amoxiclav (81.6%) was the most commonly used when only 1 antibiotic was administered, and the most commonly used combination of antibiotics was amoxicillin and metronidazole.

All 100 patients were given intravenous antibiotics and received an average of 6 doses during their inpatient stay. 15 patients were given only IV antibiotics for treatment, 17 had an incision and drain under local anaesthetic, 3 had an incision and drain under general anaesthetic, 5 had a tooth extracted and incision and drain under local anaesthetic, 7 had a tooth extracted under general anaesthetic, 52 had a tooth extracted and an incision and drainage under general anaesthetic, and an EUA was performed on 1 patient.

The average time from presentation to treatment was 0.9 days and from treatment to discharge was 1.6 days. The average length of hospital stay was 2.7 days.

78 patients had swabs taken, with 67 (85.9%) having microorganisms isolated. Fifty (74.6%) of these were aerobic infections and 17 (25.4%) anaerobic. All positive samples had anaerobic sensitivities performed. Bacteria were isolated in 64 (95.5%) cultures. *Candida albicans* was identified in 3 samples. 70.1% of the bacteria were gram positive. Gram-positive cocci were isolated in 65.4% of cultures. The most common bacteria isolated were *Streptococcus viridians*, found in 49 out of the 67 patients with positive swab results (71.6%). Other common bacteria included *S. aureus*, *Prevotella* and Group C streptococcus (Table 3). *S. aureus* were isolated from infections of skin origin only.

Antibiotic sensitivity testing showed that 64.1% of the bacteria in the positive swabs were sensitive to penicillin,

Table 1 – Type of infection.

Infection	Number
Periapical	63
Periodontal	4
Skin	14
Cellulitis	5
Salivary	3
Post-op	6
Unknown	5
Total	100

Download English Version:

<https://daneshyari.com/en/article/3178426>

Download Persian Version:

<https://daneshyari.com/article/3178426>

[Daneshyari.com](https://daneshyari.com)