Presentation and management of acne in primary care: a retrospective cohort study

Sarah Purdy, Joy Langston and Lisa Tait

SUMMARY

Background: *Acne is the most common skin disorder in young people, affecting up to 80% of teenagers.*

Aims: *To ascertain the incidence, prevalence, demographic distribution and severity of acne in primary care and to document the management of these patients for a two-year period after presentation.*

Design of study: *Retrospective cohort study using data from the medical records of 798 patients who had been treated for acne during a one-year identification period.*

Setting: *Fourteen general practices in a mixed urban area in north-east England.*

Method: *Patients aged 13 to 25 years who had acne were identified from computerised practice medical records using diagnostic codes and medication records. The medical records of these patients were then hand-searched for data for two years after presentation.*

Results: *Data were collected for 798 patients from 14 practices. The prevalence of acne in 13- to 25-year-olds was 3.1%, and the incidence was 1.6%. The ratio of male to female patients with acne was 1:1.02. Median age at presentation was 15 years for male subjects and 16 years for female subjects. Recording of site and severity was rare (18.3%). In total, 55% of patients had two or more different prescriptions for acne, 21% of patients had six or more consultations during the two-year follow-up period, and 8.5% were referred to a dermatologist.*

Conclusion: *Given previous estimates of community prevalence, it is clear that the majority of young people with acne do not present to primary care. These findings have implications for the provision of effective and appropriate health care for young people with acne.*

Keywords: *acne vulgaris; young people; prevalence; disease management.*

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Introduction

ACNE vulgaris is the most common skin disorder in adolescents, affecting over 80% of teenagers.[1-3] The prevalence of severe acne has decreased owing to improved treatment.[4] Nevertheless, although acne is not associated with severe morbidity, mortality or physical disability, it can have considerable psychological and social consequences.[5-7] The number of adults with acne appears to be increasing, although the reasons for this increase are uncertain.[8] The proportion of young people with acne who seek help from primary care services is unknown.

Method

The study was conducted in an urban metropolitan area in north-east England. The total population of the borough is 198 900 (data from Gateshead Metropolitan Council, 1998). The population shows mixed sociodemographic characteristics. A total of 121 general practitioners (GPs) in 32 general practices serve the area, and all of these practices use the same computerised medical record system (EMIS).

The study was designed as a retrospective cohort study. Patients aged 13 to 25 years who presented with acne over a one-year time period were identified from the computerised medical records, and the total number of patients aged 13 to 25 years was recorded from registration data. The period of identification was from 1 July 1998 to 30 June 1999. Incidence was calculated using the number of first presentations of acne during this 12-month period. Prevalence was determined from the number of patients consulting or receiving treatment for acne during the same period. Data collection commenced in July 2001 and was completed in April 2002.

Patients were identified from searches of diagnostic encounter and prescribing data on general practice computer systems. Nine diagnostic codes for acne were used (Read code): acne vulgaris (M2610); acne unspecified (M261x and Myu6F); acne keloid (M261H and M25y6); acne varioliformis (M260); acne necrotica (M2602-1); acne excoriée des jeunes filles (M261E); acne agminata (M261G); nectica (M261J); and other acne (M261).

The prescribing data search used a comprehensive list of medications that included those identified by EMIS (Version 5) as preparations for acne, as well as 12 other drugs listed as acne treatments by the *British National Formulary* (March 2001). The following groups of preparations were searched: benzoyl peroxide and azelaic acid; topical antibacterials; topical retinoids, oral antibiotics (oxytetracycline and tetracycline, doxycycline and minocycline, erythromycin, trimethoprim); and co-cyprindiol and oral retinoids.

The medical records (paper and/or computer) of patients with acne were accessed in order to determine the date of

HOW THIS FITS IN

What do we know?

To date, little information has been available on the epidemiology, presentation, and current management of acne in primary care.

What does this paper add?

Data are presented on the prevalence, incidence and age/sex distribution of acne patients presenting to primary care services. Given previous estimates of community prevalence, it is clear that the majority of young people with acne do not present to primary care. There is considerable variation in the management of acne, including the recording of severity as well as prescribing and referral practices.

first presentation and relevant clinical data. Management, including treatment, disease progress and referral, was then tracked for the subsequent two years, and repeat and new prescriptions were recorded. The first treatment or combination of treatments prescribed (and subsequent repeats) was described as first-line treatment. If a prescription for a new drug — for example a change in oral antibiotic or a switch from topical to oral antibiotic — was issued during the follow-up period, then the patient was defined as moving on to second-line or subsequent treatment.

Data were abstracted onto a Microsoft Excel database. To ensure that comparable data were collected for all patients, none of them were followed for more than two years from onset, and all had received active treatment for acne within the study year (mid-1998 to mid-1999). Onset of the condition was therefore between mid-1996 and mid-1999 (data collection commenced in mid-2001). The number of patients with onset of acne prior to July 1996 was noted for prevalence figures, but details of the management of these subjects were not included in the data set.

In order to check the reliability of the computer searches, a random sample of 10% of the medical records of young people aged 13 to 25 years from each practice was checked for presentation of acne during the identification period. Double coding was undertaken on a sample of 40 patient records in order to assess the accuracy of data that the two researchers collected from notes. Descriptive statistics were produced using a Microsoft Excel database and univariate analyses were performed using Graphpad software.

Sample-size calculations suggested that a sample of 400 incident cases was required to estimate incidence with a standard error of 1%. A total of 103 370 computer records were searched, and data for 798 patients from 14 practices were collected.

Ethical approval for the study was given by the Gateshead Local Research Ethics Committee.

Results

All 32 practices in the locality were invited to take part in the study. A total of 13 practices declined the invitation, and 19 practices agreed to take part. Of the latter, five practices were not suitable for inclusion, either because data from the study period were not available on the computerised record

system (two practices) or because space and computer availability made data collection impossible (three practices). The practices that were included represent a mix of practice size, location, and involvement in undergraduate and postgraduate teaching. None of the practices had a clinician with a special interest in dermatology or a particular focus on adolescent health. No patients with acne were found to have been missed when a 10% random sample of the records of 13- to 25-year-olds was hand-searched in each practice. The correlation of data collected from notes by the two researchers was 100% for computer notes and 97% for paper records.

Prevalence and incidence of acne

The incidence of acne in 13- to 25-year-olds (from a total population of 25 579) in the study year (1998/1999) was 1.6% ($n = 410$). The prevalence of acne in 13- to 25-year-olds (from the same total population) in the study year was 3.1% ($n = 798$). The ratio of male ($n = 375$) to female ($n = 423$) patients with acne, adjusted for the male:female ratio of all 13- to 25-year-olds (12 203:13 376), was 1:1.02.

For male patients, median age at first presentation was 15 years, with an interquartile range of 14 to 17 years. For female patients, median age at first presentation was 16 years, with an interquartile range of 14 to 19 years.

Site and severity of acne

The site of acne was recorded in 23.8% of records ($n = 190$), and severity was recorded in only 5.1% ($n = 41$). Both site and severity were recorded in 18.3% of notes ($n = 146$), and 52.7% of records ($n = 421$) contained no data on either site or severity.

Treatment of acne

A total of 442 patients (55.4%) moved on to second-line or subsequent treatment for their acne during the two-year follow-up period (Figure 1). Significantly more male patients ($n = 229$ [61.1%]) than female patients ($n = 213$ [50.3%]) went on to second-line treatment (Fisher's exact test, two-tailed: $P = 0.002$). A total of 35 patients (4.4%) received a fifth type of treatment for acne within two years, and 252 patients (31.6% of those who were given first-line treatment) were prescribed medication for at least two years.

The type and duration of treatments that were prescribed varied considerably across practices. Oral antibiotics were the most commonly prescribed medication, accounting for over 45% of the prescriptions in each line of treatment (Figure 2).

A significantly higher proportion of male patients ($n = 222$ [59.2%]) than female patients ($n = 154$ [36.4%]) were prescribed oral antibiotics as first-line treatment (Fisher's exact test, two-tailed: $P < 0.001$). Furthermore, a significantly higher proportion of male patients ($n = 47$ [59.4%]) than female patients ($n = 23$ [5%]) were prescribed two or more medications as first-line treatment (Fisher's exact test, two-tailed: $P < 0.001$).

Topical (non-antibacterial) preparations of benzoyl peroxide and azelaic acid were the second most commonly prescribed medications. A total of 145 prescriptions combined

these topical preparations with oral antibiotics (8.5% of 1709 prescriptions from first- to fifth-line treatment).

There was considerable variation among prescribers with regard to the use of topical antibacterial therapy. Female patients received more topical antibacterial drugs as first- and second-line treatments than did male patients (Figure 2). Oral retinoids were only prescribed for 11 patients (nine male and two female).
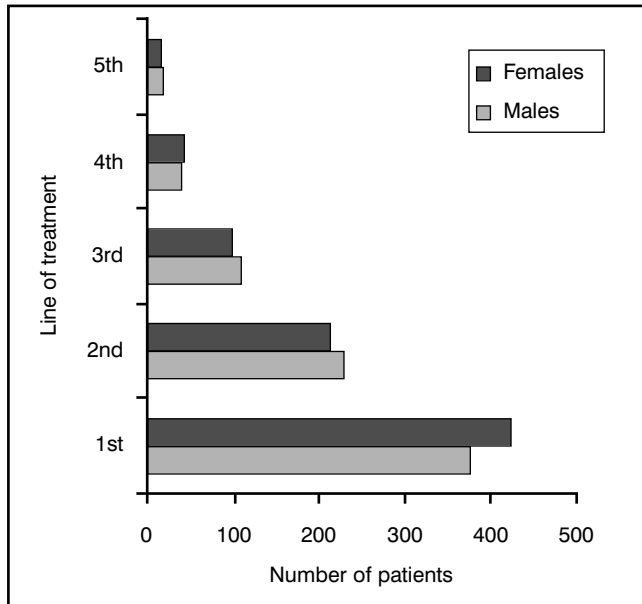

Figure 1. Number of patients proceeding from first- to fifth-line treatment. Percentage of the original number of patients who receive further treatment is 55.4% (at second line), 25.9% (at third line), 10.4% (at fourth line), and 4.4% (at fifth line).

Consultations and referrals

There was wide variation in the number of visits made by acne sufferers to their GP during the two-year follow-up period. A total of 210 patients (26.3%) made one visit, 494 (61.9%) made three or fewer visits, and 166 patients (20.8%) made at least six visits.

In total, 68 patients (8.5%) were referred to a dermatologist. They consisted of 48 male subjects (12.8% of the total number of male patients with acne) and 20 female subjects (4.7% of the total number of female patients with acne). The time period between referral and first consultant appointment ranged from three weeks to eight months, the average time being 3.6 months.

Discussion

Summary of main findings

The prevalence of acne during the study year (1998/1999) in a population of 25 579 young people aged 13 to 25 years was 3.1%. The incidence of acne in the same population and year was 1.6%. Median age at first presentation was 15 years in male patients and 16 years in female patients. The community prevalence of acne across the studied age range varies. In 14- to 16-year-olds it has been shown to be 50%, with 11% having moderate to severe acne.[5] Overall estimates for 14- to 24-year-olds are as high as 80%.[1-3] As with many other chronic conditions, large numbers of young people with acne are not seeking help from primary health-care services.

Lack of accurate standardised recording of severity and site makes comparison of the management of acne in primary care difficult. Terms for describing the condition vary. Some GPs have noted severity using recognised
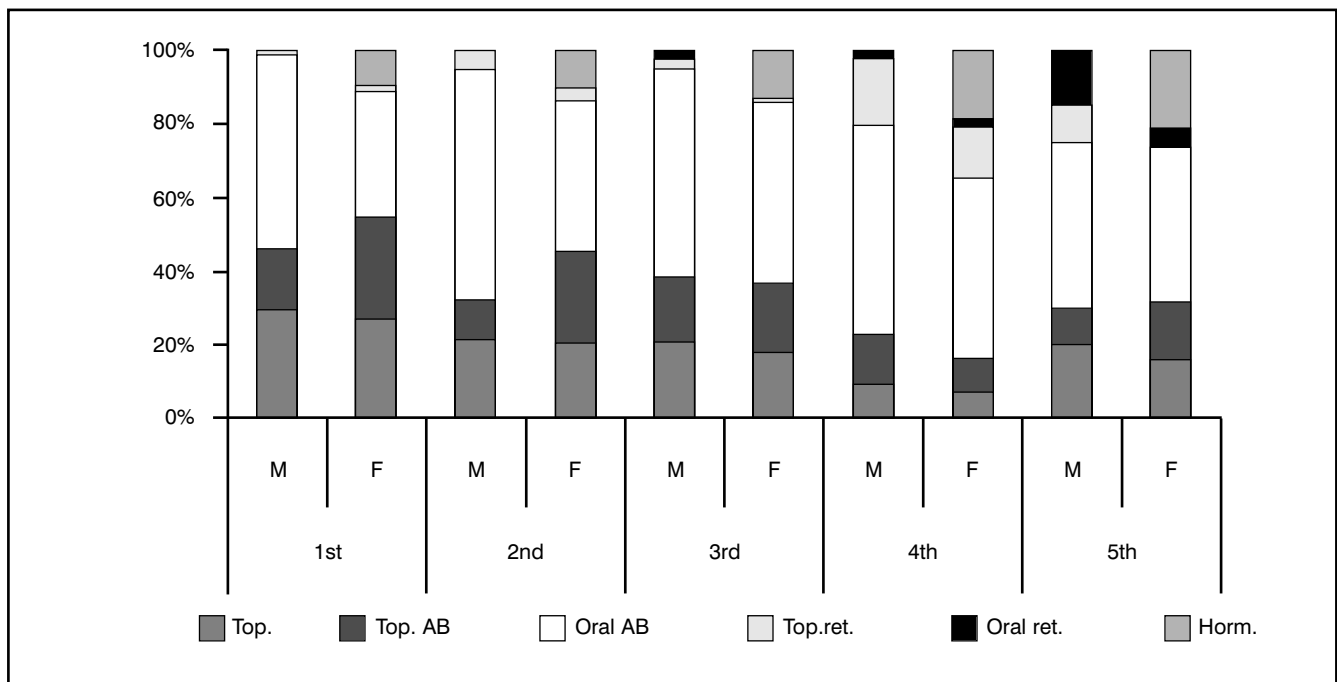

Figure 2. Percentages of the different medication groups prescribed for male and female patients in first- to fifth-line treatment. Numbers of medications in each group: first-line (male = 420, female = 452); second-line (male = 254, female = 225); third-line (male = 117, female = 106); fourth-line (male = 45, female = 43); fifth-line (male = 22, female = 25). Drug groups: Top. = topical non-antibacterial; Top.AB = topical antibacterial; Oral AB = oral antibiotic; Top.ret. = topical retinoid; Oral ret. = oral retinoid; Horm = co-cyprindiol (hormonal).

terminology (mild, moderate or severe),[9] while others have documented physical signs (including 'cystic', 'pustular' and 'comedones'), although these are not necessarily indicative of severity. Other GPs have used less scientific but nevertheless descriptive terms, such as 'quite nasty', 'ghastly' or 'acne+++'.

In this study, more male than female patients with acne proceeded to second-line treatment and received more than one medication. A high proportion of male patients aged 15 years or under presented to their GP. These findings correlate with the results of a community study, which showed that boys aged 14 to 16 years had significantly more severe acne than girls in the same age group.[5] However, records of severity were not sufficiently complete to allow this hypothesis to be tested in the present study.

The type and duration of treatments varied considerably across practices. Over 50% of patients had at least two different prescriptions for acne, and a small number went on to fifth-line treatment. The use of oral retinoids was recommended or instigated by specialist dermatologists.

Around 20% of patients made at least six visits for treatment of acne during the two-year follow-up period. Only 8.5% of the total number of patients who presented with acne were referred to a dermatologist within two years. The reasons for referral are unclear, as few records contained data on the progress of the condition. In some cases, scarring and severe disfigurement from acne were recorded but no referral was made. National guidelines on referral for acne have now been issued. These advise that patients with moderate acne that has failed to respond to several courses of treatment over a period of at least six months should be referred.[10]

Strengths and limitations of the study

The retrospective cohort design is an efficient method of collecting data about existing events.[11] However, reliance on the routine availability of data from pre-existing records can result in incomplete and possibly non-comparable information for all study subjects being obtained. Five practices were excluded from this study because data were not routinely available or accessible. However, the final sample varied with regard to practice size, type, and sociodemographic distribution. Although all prescribing data were recorded using the same system, variance across practices was found. Non-prescribing data, such as the site and severity of acne, were not routinely entered in the medical records.

The search strategy used a protocol with defined prescribing and diagnosis codes. The accuracy of searching and data extraction was satisfactory. Initial searching methods for patients with acne included the use of diagnostic codes that are dependent on reliable and accurate recording of diagnosis. However, in all of the practices in this study, diagnostic codes were used in combination with prescribing data. Some drugs that are used to treat acne are also used for other conditions. Patients who were prescribed these drugs were only included if the prescription could be linked to management of acne in the clinical record. The study did not assess compliance with treatment, and the lack of data in the medical records on disease progress means that outcomes cannot be assessed.

Agreement/disagreement with the existing literature

Epidemiological data on the presentation of acne in primary care are scarce. The only available data showed that the recorded prevalence of acne among patients presenting to primary care during 1991/1992 was 1.3%.[12] This figure is lower than the prevalence reported in the present study, but it is based on routinely collected encounter data, and may be confounded by the recording of other conditions as the presenting complaint. No other cohort studies of primary care management of acne were identified. Although there is ongoing research to assess the effectiveness of certain interventions, there is little good quality data from randomised controlled trials about the efficacy of many treatments that are used for acne.[9,13-15]

Implications for future research or clinical practice

The community prevalence of acne is much higher than the prevalence recorded in this study. It is probable that not all teenagers who could benefit are accessing primary care for acne treatment. This study highlights the importance of providing healthcare services that are both appropriate and accessible to young people.[16,17] In addition, there is a need to implement the existing research evidence on the management of acne, including timely and appropriate referral for specialist care.

Future research should provide further evidence of the effectiveness of existing treatments for acne, and should focus on how young people with this disorder use different informal and formal healthcare services to access information and treatment.

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