EARLY MENARCHE AND THE RISK OF TOXIC SHOCK SYNDROME

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ABSTRACT

The age of puberty has been observed to be falling steadily around the globe. Improved nutrition, obesity and factors including population movement may contributed to an earlier menarche (1,2). This endocrinological shift has resulted in a number of significant changes to the lifestyle of girls between 10 and 14 years of age, as well as those who care for them. Some of these changes may have negative health effects. For instance an earlier menarche may increase future cardiovascular risk (3). Earlier menstruation includes the earlier use of absorbent products. The use of a number of absorbent products or devices during menstruation is associated with toxic shock syndrome in a very small proportion of individuals. We report a case of a 12-year old who contracted toxic shock syndrome associated with menstruation. Her history demonstrated that her family and health professionals lacked an awareness of the risk of TSS in someone of this age.

Keywords: Toxic shock syndrome; puberty; menstruation; adolescent health literacy; adolescent risk perception

INTRODUCTION

The age of puberty has been observed to be falling steadily around the globe. Improved nutrition, obesity and factors including population movement may contributed to an earlier menarche (1,2). This endocrinological shift has resulted in a number of significant changes to the lifestyle of girls between 10 and 14 years of age, as well as those who care for them. Some of these changes may have negative health effects. For instance an earlier menarche may increase future cardiovascular risk (3). Earlier menstruation includes the earlier use of absorbent products. The use of a number of absorbent products or devices during menstruation is associated with toxic shock syndrome in a very small proportion of individuals. We
report a case of a 12-year old who contracted toxic shock syndrome associated with menstruation. Her history demonstrated that her family and health professionals lacked an awareness of the risk of TSS in someone of this age.

CASE REPORT

Ms. PA was twelve years old when she suffered a severe illness. She had been previously well. She was born at term in a Hospital in the south of England. She had no history of recurrent infections; she was allergic to penicillin (she had developed a rash following the use of amoxicillin as a toddler). She was fully vaccinated, followed appropriate developmental milestones and had no hospital admissions. She did not suffer acne or eczema; none of her family was prone to Staphylococcal infections. She enjoyed school where she had an excellent attendance; she was physically active and competed in a club outside school and attended dancing classes. She had started puberty at 10 years of age, earlier than her mother. Her menarche was at 11 years 6 months; her periods had been regular but heavy. From the start she had used tampons during menstruation; her mother used these too. No specific discussions relating to the risk of these had taken place although PA had attended classes at school when tampons and their risks had been discussed.

After approximately 6 months from the start of her menarche PA became unwell. On the second day of her period she felt nauseous and sleepy. She felt non-specifically unwell the next morning and vomited; diarrhoea began that afternoon. She had a headache and felt light headed. She developed a rash over much of her body; she continued to feel unwell and sleepy. The family contacted the on-call general practitioner the following morning, the third day of her illness. On his examination he found PA to be febrile; he thought she may be suffering an infection or an allergic reaction. He prescribed an antibiotic. However that afternoon PA appeared to improve and her family did not give the penicillin (to which they thought she was allergic.) The following morning however PA was more unwell, she described dizziness and faintness and stomach aches. The family took her to casualty. At this point PA had not told her family or the general practitioner that she was having a period or that she was using tampons at the time.

In Hospital PA was found to have a high temperature and low blood pressure: she was given intravenous fluids, oxygen and broad spectrum antibiotics. The family noted that the rash continued to spread. Her general condition began to improve. A diagnosis of a streptococcal infection was made by hospital staff. It was on the second day of her admission, the fifth day of her illness, when a nurse noted that PA was still using tampons for her period. Their use was stopped: a swab of a tampon grew Staphylococcus aureus; this was later shown to be producing TSST-1 and SEA-1. Her antibiotics were changed.
Two days later PA was discharged from Hospital, well but fatigued. Her skin had begun to peel over the hands and feet; her fever had resolved. Some six weeks later she noted a few days of dramatic hair loss, on brushing her hair: this resolved. She made excellent progress; she has not suffered any long-term complications. She did not suffer any sleep disturbance or post-traumatic type symptoms. She was advised not to use tampons in future: her family were worried that the potential risks of tampons might compromise her ability to compete in athletics and dancing. However over the subsequent years this has not proved to be a significant challenge. Three years later PA has competed in national championships and has not suffered any further serious illness.

DISCUSSION

Toxic shock syndrome is a rare condition that may be rapid and can affect any member of the population. It is caused by a toxin produced by *Staphylococcus aureus* (4,7). A proportion of cases develop in adolescents during menstruation and it has been suggested that the risk of TSS is greater in this group as protective antibody titres are lower in younger individuals. As with many severe illnesses, early treatment is considerably more effective and potentially life-saving. Experience with TSS following burns has demonstrated this particularly clearly, and pre-emptive management often protects patients from developing the full syndrome with multi-organ dysfunction (4,6).

For these reasons it is important to raise awareness of TSS among those most at risk. One group in whom there is a potential problem are those using tampons or other internal devices for the first time. Girls aged 10 to 12 years now belong to this cohort. As the age of puberty (including menarche) has declined steadily in many countries the age of first menses has fallen too (2). Does this generation of younger girls have the required information and awareness of TSS? What is the best way to convey this information? Should manufacturers review their approach to those starting to use absorbent materials? Are these girls more likely to take risks and use various devices without reading the warnings related to this rare condition?

The size of this problem remains small. A study run by the British Paediatric Surveillance Unit in 2009 has demonstrated that rates of menstrually-associated TSS are very low, with only one or two cases annually in England, Wales, Scotland and Northern Ireland (in press). Given the rarity of this pathology it will be difficult to check implementation of any changes in health literacy strategies.

CONCLUSION

Adolescents using any vaginal devices during menstruation are at risk of a rare complication, that of toxic shock syndrome. The falling age of puberty
means younger girls are exposed to this risk. This case illustrates this problem and why it becomes important to raise awareness in a younger population, and their parents of this aspect of health care.

OTHER RESOURCES:

Listening to patients with rare diseases: The voice of 12 000 patients: www.eurodis.org

www.toxicshock.com

Declarations of Interest: Colin Michie has worked as a consultant to the Toxic Shock Syndrome Information Service

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