

Toxic shock syndrome (TSS)

Description, course, causes
and preventive measures.



Definition

What is TSS?

Toxic shock syndrome, also known as TSS, is an acute infection that is caused by various bacteria and that, in isolated cases, can be life-threatening. Typical symptoms include fever and low blood pressure as well as a sunburn-like skin rash and organ failure.¹

TSS was described in children of both sexes for the first time in 1978. Shortly after, in 1980, it was officially defined as a disease by the Center for Disease Control and Prevention (CDC). In contrast to the widespread mistaken belief that TSS is caused by tampons, it is not a gynaecological disease but instead occurs in both men and women in connection with various clinical situations such as abscesses or burns.¹ TSS is generally a very rare disease. According to estimates by the Robert Koch Institute, in Germany there are 3 to 6 cases of TSS per 100,000 sexually active women.²

Triggers

How does TSS develop?

TSS is caused by the bacteria *staphylococcus aureus* and *streptococcus pyogenes*. These pathogens are also present in some healthy people, but under certain circumstances can replicate very rapidly and produce large quantities of dangerous toxins (exotoxins with superantigenic properties). The human immune system generally reacts to these toxins by forming protective antibodies. Depending on the status of the immune system and the quantity of toxins being generated, the body may, however, respond by developing TSS.¹



Superantigenic property

A superantigenic property is one that can stimulate an excessive immune response to these toxins. TSS then develops when the body has not yet formed antibodies to these toxins or is unable to do so. This is the case, for example, in young women after the onset of menstruation before the body has developed the necessary antibodies.¹

Is it caused by tampons?

The mistaken belief that tampons led to TSS is a hangover from 1980 when a special, highly absorbent tampon was placed on the market that was actually linked to the disease. This was due less to the material than to the highly absorbent foam core that swelled up enormously. After a number of cases of TSS associated with menstruation were linked back to these tampons, they were removed from the market in the same year.¹

Preventive measures for safe use of tampons^{3,4}

- thoroughly wash hands before and after insertion
- use the right kind of tampon for the relevant level of bleeding
- frequently change the tampon on days with heavier bleeding
- change the tampon after max. 8 hours
- do not use unwrapped or damaged tampons
- start with the lowest tampon absorbency when using a tampon for the first time
- make sure that the last tampon has been removed once your period has ended
- women who have already had TSS should speak to a doctor before starting to use tampons again

Today, we know: during menstruation, the pH in the vagina increases due to the blood, which can in principle favour the formation of toxins. Nevertheless, there is no proven relation between TSS, menstruation and the use of tampons.¹

Because the insertion of the tampon does, however, involve intervening with a sensitive part of the body, careful hygiene is recommended to prevent infections.

EDANA Code of Practice

To guarantee the quality and safety of tampons, the majority of European tampon manufacturers are required to follow a strict set of guidelines under the EDANA Code of Practice. The code includes specifications for production and materials, as well as instructions for use and warnings that are intended to further minimise the risk of developing TSS.⁴

How does the infection proceed?

TSS typically starts with the sudden onset of fever, a drop in blood pressure and a sunburn-like skin rash, which starts to flake off and then peels off completely after about 1 to 2 weeks. Some patients also develop chills with nausea and vomiting or other non-specific symptoms such as muscle aches and headaches.⁵

Over the further course of the disease, patients can develop sepsis or even organ failure. The severity of the TSS that develops depends on the bacterium that is responsible.⁵

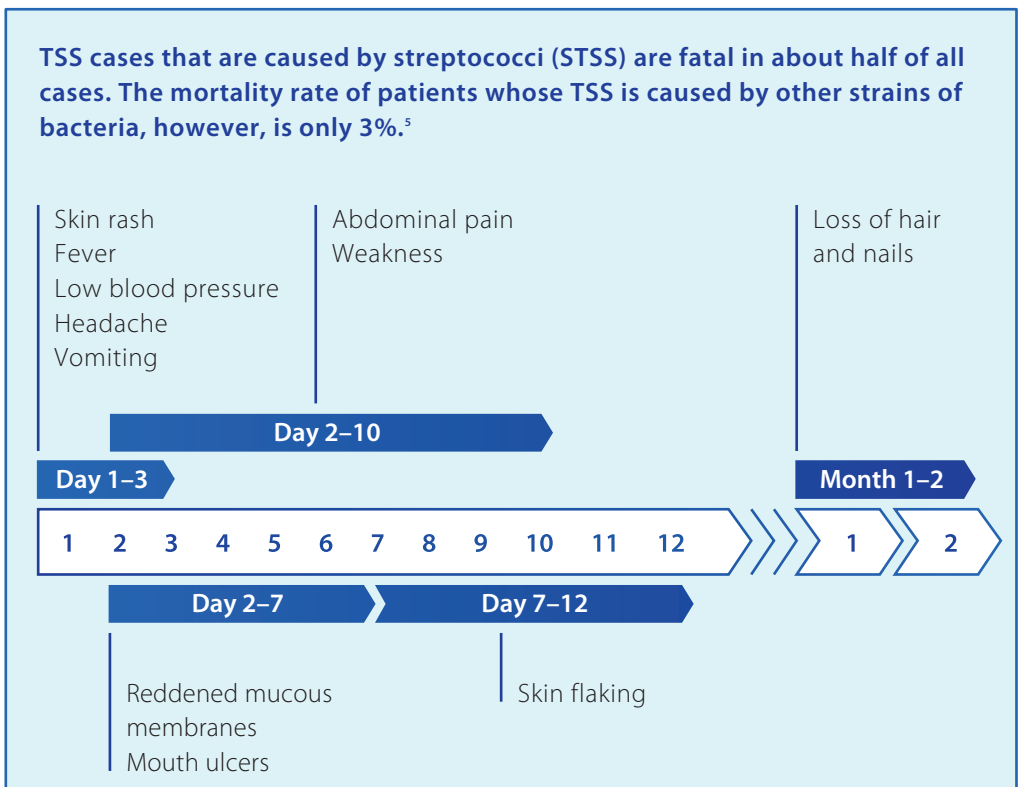


Figure 1: Typical course of the clinical symptoms of TSS in accordance with Mendling W.!



How is TSS diagnosed?

TSS is diagnosed using a specific laboratory test. Various clinical criteria and symptoms are also taken into account. A diagnosis of TSS is then likely if several characteristic symptoms, such as fever, high blood pressure, skin rash and organ failure are present and the causative bacterium is detected in the blood or cerebrospinal fluid. Because the disease is extremely rare, there is no acute suspicion if isolated symptoms develop. Only if several of the typical symptoms occur together and cannot be explained by a known disease should TSS be considered and ruled out together with the doctor.

Tested quality – a strong foundation for safety and trust.

The quality assurance procedures for Rauscher tampon products are fully integrated into Lohmann & Rauscher's quality assurance system. We don't just comply with national standards, but also international ones and, when it comes to feminine hygiene products, it is really important to us to take further measures still to ensure their safety. Our tampons regularly undergo gynaecological safety testing and are rated "very good". Furthermore, we adhere strictly to the EDANA Code of Practice.



¹ Mendling W. Das Toxic-Shock-Syndrom aus gynäkologischer Sicht. Frauenarzt 2016;11:1052–1058.

² RKI-Ratgeber: Staphylokokken-Erkrankungen, insbesondere Infektionen durch MRSA. https://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_Staphylokokken_MRSA.html

³ <https://www.frauenaeerzte-im-netz.de/aktuelles/meldung/toxisches-schocksyndrom-risiken-durch-tampon-verwendung-aeusserst-gering/>

⁴ EDANA Code of Practice, Version 2, April 2012.

⁵ Ross A und Shoff HW. Toxic Shock Syndrome. StatPearls Publishing; Januar 2018.



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