



# Update on the antibiotic treatment of uncomplicated skin abscesses

Annette Sethmann, PhD

Cutaneous abscesses are often caused by *S. aureus*. The most important therapeutic measure is drainage of the accumulated pus. Although the clinical benefit from additionally administering oral antibiotics is well-proven, the increasing problem of resistance has prompted growing criticism of this approach. Against this backdrop, it is therefore interesting that an antimicrobial action – even against MRSA – has been demonstrated for locally applied ammonium bituminosulfonates, which have long been used to treat abscesses.

## Antibiotics increase the success of treatment and reduce recurrences

Cutaneous abscesses are local accumulations of pus in the skin, which generally occur as a result of bacterial infections. Frequent causes are staphylococci that may either be sensitive to antibiotics (methicillin-susceptible *S. aureus*, MSSA) or resistant (methicillin-resistant *S. aureus*, MRSA) [1]. Since abscesses are poorly accessible to antibiotics [2], surgical

incision and drainage of the accumulated pus are the key measures [3]. In terms of improving the outcome of surgical interventions and/or the avoidance of near-term recurrences, a meta-analysis has shown a clinical benefit of the additional oral administration of antibiotics for small, uncomplicated skin abscesses (Fig. 1) [4]. However, it remains unclear whether this benefit outweighs the risks of side effects and development of resistance – particularly because not a single

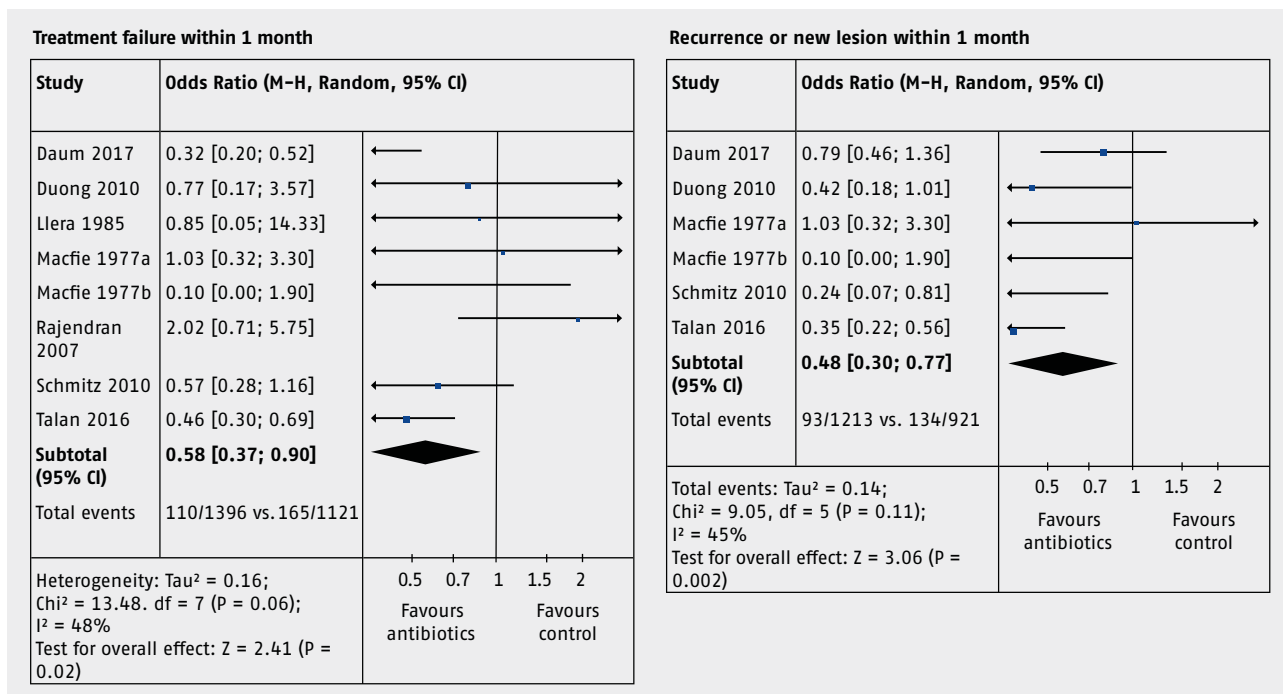


Fig. 1. Forest plot on the effect of antibiotic treatment for abscesses with respect to avoidance of failure of surgical intervention and/or recurrence [4]. (M-H = Mantel-Haenszel method; CI = confidence interval)

Tab. 1. Antimicrobial efficacy of ammonium bituminosulfonate against methicillin-susceptible (MSSA) and methicillin-resistant (MRSA) strains of *S. aureus* [7].

Test concentration in culture medium preparation (n = 3)		After 24 hours		After 48 hours		After 72 hours	
		MRSA	MSSA	MRSA	MSSA	MRSA	MSSA
Stock solution	250 mg/ml	–	–	–	–	–/–	–/–
1:2 dilution	125 mg/ml	–	–	–	–	–/–	–/–
1:4 dilution	62.5 mg/ml	–	–	–	–	–/–	–/–
1:8 dilution	31.25 mg/ml	–	–	–	–	–/–	–/–
1:16 dilution	15.63 mg/ml	–	–	–	–	–/–	–/– (n=2) –/(+) (n=1)
1:32 dilution	7.81 mg/ml	–	–	–	–	–/–	–/+
1:64 dilution	3.91 mg/ml	+	–	+	–	–/+	–/+
1:128 dilution	1.95 mg/ml	+	+	+	+	+/+	+/+
1:256 dilution	0.975 mg/ml	+	+	+	+	+/+	+/+
1:512 dilution	0.488 mg/ml	+	+	+	+	+/+	+/+
1:1024 dilution	0.244 mg/ml	+	+	+	+	+/+	+/+

– no visible growth detectable  
+ visible turbidity/growth detectable  
–/– no visible growth detectable due to product turbidity/no growth after subculture  
–/+ no visible growth detectable/growth after subculture  
+ /+ visible growth detectable in the culture medium preparations/after subculture

case of abscess-related sepsis occurred in recent studies (n = 2,051) [3]. This warrants a critical re-evaluation of systemic antibiotic therapy.

### Resistance is not the only problem

Apart from the development of resistance, antibiotics also carry a relevant risk of side effects for the individual patient. They are responsible for almost 20% of all visits to an emergency department due to adverse drug reactions [3]. The most commonly used antibiotics for abscesses – trimethoprim + sulfamethoxazole and clindamycin – are associated with the highest rates of moderately severe to severe allergic reactions. According to a meta-analysis, such reactions occur in one of every 23 patients treated for skin abscesses with the established oral antibiotic therapy [3]. Hence there is an obvious need for alternative effective antimicrobial treatments.

### Pale and dark forms of Ichthiol® have antibacterial activity

With that in mind, the fact that the long-established dermatological agents – locally applied sodium and ammonium bituminosulfonate – were proven to show antibacterial activity in vitro against several Gram-positive bacteria, is particularly noteworthy [5–7]. Sodium bituminosulfonate (pale Ichthiol®) showed minimal inhibitory concentrations (MIC<sub>90</sub>) of 0.25 mg/ml for MRSA, 1 mg/ml for MSSA and 0.03–0.125 mg/ml for various species of streptococci [5]. Hitherto unpublished results have since also become available [7] for ammonium bituminosulfonate (dark Ichthiol®) (Tab. 1, data on file). Triplicate determinations produced an MIC of 15.6 mg/ml for MSSA and an MIC of 7.8 mg/ml for MRSA [7] and thus demonstrated an effect even on abscesses caused by MRSA.

### Ichthiol® in self-medication

Patients frequently show abscesses which, in the terminology of dermatologists, “are not yet ripe” i.e., they are not fluctuant and no pus emerges on incision. Patients often treat such abscesses themselves and here too, an antimicrobial treatment of the bacterial infection should take place.

Anti-inflammatory ammonium bituminosulfonates promote maturation of the abscess and its evacuation and owing to the additional antibacterial action, are suitable for the self-treatment of abscesses – especially because no resistance to the active agent is likely to occur.

### Literature

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