



*The running of the Kentucky Derby*

## PIC QUESTION OF THE WEEK: 5/03/10

Q: What is serum sickness and can drugs cause this type of reaction?

A: Serum sickness is a type III hypersensitivity reaction typically presenting with three classic features - fever, arthralgia, and rash (most often urticaria) – and often accompanied by lymphadenopathy, edema, leukocytosis, proteinuria, and reduced serum complement concentrations. It is characterized by circulating immune complexes that deposit in the vascular endothelium stimulating an inflammatory reaction and tissue injury. Historically, serum sickness was originally described in patients receiving antitoxins derived from horse *serum*. This cluster of signs and symptoms has also been associated with the administration of drugs and the phenomenon is known as a serum sickness-like reaction (SSLR). Similar, but less severe signs and symptoms are observed with SSLRs than with classical serum sickness. In addition, hepatic and renal complications are considered rare. The most notable difference, however, is the lack of detectable circulating antibodies in SSLR. The exact mechanism for these reactions is unknown; however, they may be due to accumulation of toxic intermediary metabolites in susceptible patients. The onset of a SSLR can range from six days to six weeks after initial drug exposure, but can develop within one to four days after re-exposure. On occasion, SSLRs can develop after the agent is discontinued. Symptoms generally subside within 72 hours after withdrawing the associated agent; however, some patients may not experience complete resolution for up to a month. Primary management of SSLRs is dependent on recognition and discontinuation of the offending drug. Antihistamines are commonly used to treat the pruritus and urticaria associated with SSLR, while corticosteroids rapidly reduce the symptoms of joint pain, edema, and rash. SSLR is often seen in pediatric patients, primarily because of their exposure to various antibiotics. Cefaclor is the drug most often associated with SSLR. Nearly 70% of voluntary reports of adverse effects reported with the drug are due to SSLRs. Interestingly, the occurrence of SSLR is almost exclusive to cefaclor suspension and not the capsule formulation. Other antimicrobials implicated in SSLRs are amoxicillin, cephalexin and other cephalosporins, ciprofloxacin, rifampin, minocycline, and some sulfonamides. A significant number of SSLRs have also been reported with monoclonal antibodies such as infliximab, efalizumab, omalizumab, etc. NSAIDs, bupropion, allopurinol, carbamazepine, fluoxetine, and a variety of other drugs have also produced the reaction. SSLRs are frequently associated with drug administration and should be suspected when fever, rash, and joint pain accompany drug administration.

### References

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**The PIC Question of the Week is a publication of the Pharmaceutical Information Center, Mylan School of Pharmacy, Duquesne University, Pittsburgh, PA 15282 (412.396.4600).**