



# e-Network Forum

## CALIFORNIA BLOOD BANK SOCIETY

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### ***Clinical significance of anti-Sd(a) - conflicting results with tube and gel antiglobulin tests***

**A colleague in Virginia** reports that they have discovered a patient whose serum contains anti-Sd(a), and that they would appreciate it if colleagues would share their **approach to selecting blood products for such a patient**. The inquiring colleague states that she has read the information provided by the current edition of the AABB Technical Manual, but feels that additional information would be helpful. Her main concern is that the anti-Sd(a) is causing problems for her laboratory with finding "compatible" units for transfusion. Up to this point, every unit they have crossmatched using a tube method has revealed microscopic, **mixed-field agglutination when the tubes are examined microscopically following an antihuman globulin test**. However, their reference lab currently uses a **GEL-antiglobulin methodology**, and the results from this test are **ruling out** any incompatibility as well as any clinically significant antibodies. The inquiring colleague says that the only reason the reference lab detected the anti-Sd(a) was because of her insistence that their work-up be repeated using the tube method that the hospital uses. She adds that the reference laboratory is telling her not to worry about anti-Sd(a), but she is still wondering if anyone else in the forum has had **personal experience** in dealing with this antibody?

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**ADDENDA** July 30, 2003

The following responses were received.

1. **A very experienced transfusion medicine physician in New York** is of the opinion that anti-Sd(a) is **not a clinically significant antibody**, even though in his experience the IgM versions can fix complement, and there have been examples of IgG anti-Sd(a) and he suggests that the inquiring colleague might want to read an article that was published in Vox Sang in 1982 which he co-authored and which is summarized as follows: (Spitalnik S, et al. Vox Sang. 1982;42(6):308-12.) Pre- and post-transfusion antibody titers were performed on 6 patients with anti-Sd(a) transfused with incompatible blood. In 3 of these patients a significant rise in IgG antibody titer was found. The data suggest that in occasional patients the Sd(a) antigen does evoke a secondary immune response. We evaluated 245 pregnant women for the presence of Sd(a) and found that 30% were Sd(a-). This incidence was significantly higher than that found in normal blood donors (4%), but was lower than that described in previous reports. We found that 22% of pregnant women in their first trimester were Sd(a-) whereas at term 36% were Sd(a-). These significantly different incidences of antigen positivity suggest decreased antigen expression with progressing pregnancy, as seen in the Lewis system. No difference was found in the incidence of anti-Sd(a) between pregnant women, either during their first trimester or at term, and normal donors.] The New York physician adds that in his practice, giving **antiglobulin crossmatch compatible blood would be ideal when dealing with anti-Sd(a)** (which is what his transfusion service laboratory also does for Lewis blood group antibodies). However, if no crossmatch compatible blood is available, he would authorize giving least incompatible red cells, assuming that all other antibody specificities have been ruled out. He is aware of a single case where anti-Sd(a) was reportedly the cause of a hemolytic transfusion reaction [Peetermans ME, Cole-Dergent J. Vox Sang. 1970 Jan;18(1):67-70. Haemolytic transfusion reaction due to anti-Sda. (no abstract available)], but he would not change his overall approach to this antibody as a result of that singular report. Finally, if concerned because of strong antiglobulin phase positive crossmatches with a "known to be" clinically insignificant antibody, his hospital's usual procedure is to infuse the first 30 ml or so slowly (over 30 minutes) with careful observation. If there is no change in vital signs or clinical symptoms, the rest of the unit(s) can be given at the usual rate.
2. **The director of a highly respected immunohematology reference laboratory in Los Angeles** is of the opinion that anti-Sd(a) is **usually not clinically significant** and he states that there are several reports in the literature of normal survival of incompatible RBCs. To quote him (verbatim) "I believe that there are only two reports of HTRs caused by anti-Sd(a) and those involved units of blood with a "super Sda" antigen. As the gel test is negative, and >90% of Europeans use only column agglutination tests (e.g., gel test) for compatibility testing, I would not be concerned about the antibody." A good review on the clinical significance of anti-Sd(a) can be found on pages

816-817 of: Issitt PD, Anstee DJ. Applied blood group serology, 4th ed. Durham, NC. Montgomery Scientific Publications, 1998.

3. According to an **expert immunohematologist in Michigan** (verbatim), "the Sda (Sid) antigen, named after Sidney Smith of the Lister Institute in England, whose red cells had a strong expression of Sda, is considered identical in structure to the Cad antigen. Cad reacts with Dolichos biflorus and Glycine max (soybean) a lectins, and is expressed variably on red cells; rare Cad 1 red cells are polyagglutinable. **Most Sd(a+) cells are Cad 3/4**, and the transfusion reaction cases are most likely associated with the Cad 2 phenotype. Such cells are also referred to as "Super Sid" or Sd(a++) cells. The Cad (Sda) structure is also present on the Tamm-Horsfall urinary glycoprotein; hence the inhibition of anti-Sdaby urine from Sd(a+) individuals. It is **most unlikely that an anti-Sd(a) that can only be found microscopically has ever caused a hemolytic transfusion reaction involving Cad 3/4 cells**. Many workers do not read tests microscopically, and many use column technologies such as the gel test. There are no reports of transfusion reactions due to anti-Sda that have been missed as a consequence of these practices. This correspondent has only seen 5 examples of anti-Sda; two were referral samples from facilities that did read tests microscopically, two were received for research purposes, and one was in a patient whose serum gave macroscopic mixed-field reactivity with reagent red cells."

**ADDENDA** July 31, 2003

4. **A colleague in Toronto** is of the opinion that it is appropriate to **ignore** this antibody specificity as it is usually an IgM antibody having no credible reports of clinical significance. Expression of the Sd(a) antigen on red cells is highly variable. One often finds a lack of reactivity when multiple donors are tested if microscopic readings are avoided and, especially when using anti-IgG antiglobulin reagents. Perhaps, this laboratory should **consider discontinuing this practice of reading everything microscopically** as there are no requirements to do so. If the transfusion laboratory would like to continue using microscopic readings and antiglobulin sera containing both anti-IgG and -Complement, the Canadian's suggestion would be to try **urine neutralization** of the anti-Sd(a) (described in the current edition of the AABB Technical Manual on pages 704-705), and perform crossmatches using the urine neutralized serum.

Please submit comments to the [e-Network Forum](#).

Ira A. Shulman, MD  
CBBS e-Network Forum Editor & Moderator



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**Addenda:** July 30 & 31, 2003

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