SEROLOGY BULLETIN

TESTING UPDATES AND TRENDS
MNIT SEROLOGY TESTING LABORATORY

Mendez NATIONAL INSTITUTE of TRANSPLANTATION at the S. Mark Taper Foundation Transplant Center

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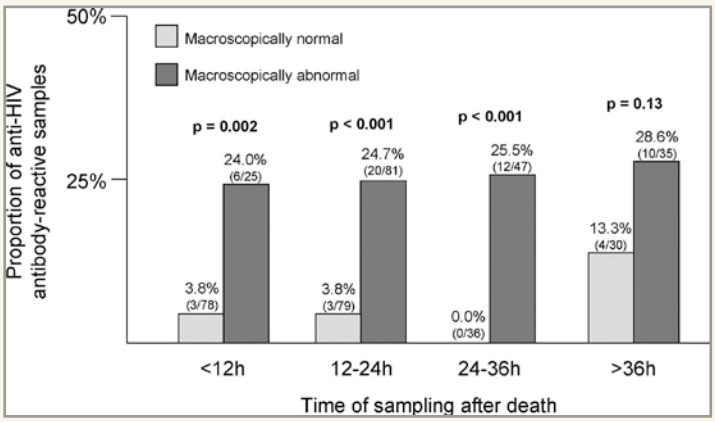
Testing Cadaveric Specimens for Viral Markers- Challenges and Solutions

Cadaveric donors are tested with blood samples collected at variable times after death and, if collected up to 24 h post-mortem, may be used in accordance with AATB regulations for infectious disease screening. However, these sera are often of less than ideal quality and occasionally yield false-positive results in serological assays (fig. 1); resulting in donors being needlessly rejected.

The abnormalities in post-mortem sera can be easily determined via visual inspection (i.e. hemolysis, icteric or cloudy appearance). According to Challine et al the macroscopic aspect of serum collected post-mortem appears to be the best predictor of the specificity of serological testing in cadaveric donors (1).

Figure 1. Proportion of anti-HIV antibody-reactive cornea donor samples, according to the macroscopic quality of serum and the interval between death and blood collection (1).



Recently, Edler et al studied paired cadaveric and pre-mortem sera of 33 potential donors. Results were discordant in 17 of 33 donors by at least one assay. Most frequently, HBV marker tests (HBcAb and HBsAg) yielded false-positive results with the cadaveric serum. The authors concluded that the serological testing of cadaveric sera should be augmented by other screening strategies such as detection of viral nucleic acids (NAT).

MNIT is at the forefront of understanding the effect of macroscopic abnormalities on NAT. Our laboratory recently evaluated the effect of hemolysis on NAT (Transcription Mediated Amplification, TMA) and presented the findings at the 2011 AATB Annual Meeting. Our data indicates that hemolysis has small but significant effect on neat samples resulting in invalid NAT runs and repeats, whereas in diluted samples hemolysis was of no risk for NAT test problems. This indicates that in hemolyzed specimens dilution can avoid inhibitory effect of free hemoglobin on NAT.

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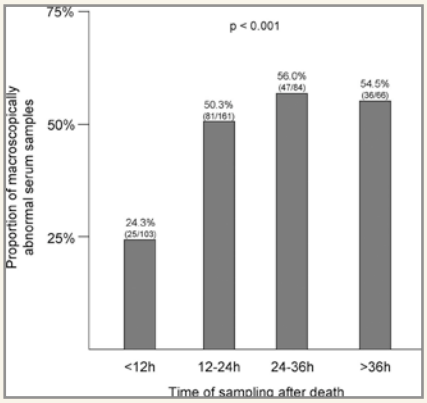
Figure 2. Proportion of macroscopically abnormal sera vs time of post-mortem sampling (1).



Our laboratory routinely evaluates all specimens for:

- Hemolysis using colorimetric scale
- Tube type (SST v Red Top etc)
- Presence of other macroscopic abnormalities

The effect of post-mortem changes in blood specimens can be ameliorated in the following ways:

- Drawing blood < 12 hr post-mortem, if possible
- Using pre-mortem samples if possible
- Handling specimens according to strictly defined procedures (i.e. validated shippers, etc)
- Diluting sera for NAT (FDA approved)

References

1. *Transplantation* 2006;82: 788–793
2. *Journal of Medical Microbiology* (2011), 60, 920–926