BACTERIOLOGICAL AND FUNGAL CONTAMINATIONS OF CORNEAL ORGAN CULTURES MEDIA IN FRENCH EYE BANKS: 2008 RESULTS

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ABSTRACT:

Purpose: The French Health Products Safety Agency (Afssaps) is the French national competent authority for the evaluation, inspection and laboratory control of tissues. Afssaps Laboratories and Controls Directorate (DLC) is in charge of the external quality control of tissues. Since 2005, the DLC has registered on its micro-organism database microbial contamination found in the corneal organ cultures media in the French Eye Banks. From 2005 to 2008, the comparison of different types of contaminations have been analyzed.

Methods: Each eye bank yearly sends its list of micro-organisms found in their corneal organ cultures media. The step in the process when the contamination was detected is registered. The biological samples taken were performed 3 microbiological controls. The germ distribution was equivalent in all the different eye banks. The contaminations were detected by blood culture bottle methods (80% of banks) and 80% used a specific fungi media. The distribution of germs was performed on different media (P: Sampling Media, C: Storage media, D: Deswelling media, CO: Corneoscleral rim).

RESULTS: Since 2005, the national contamination rate has significantly decreased from 10.6% to 8.3% in 2008 (p<0.001). The germ distribution was equivalent in all the different eye banks (Bacteriologic: 64%, Fungi: 38%, Yeasts: 8%). The contaminations were detected by blood culture bottle methods (80% of banks) and 80% used a specific fungi media. The distribution of germs was performed on different media (P: Sampling Media, C: Storage media, D: Deswelling media, CO: Corneoscleral rim). The distribution of the germs was as follows: 78% of bacteria (P. aeruginosa, enterobacteriaceae), 15% of fungi (C. glabrata, C. albicans), 4% of mycobacteria (M. avium). Among fungi, 15% of yeasts (C. glabrata, C. albicans), 2% of yeasts (not identified).

Conclusions: The survey allowed Afssaps to have a better and updated detection of micro-organisms responsible for corneal contaminations. It allowed to detect which germs had to be sent to the banks for new collaborative studies led by the DLC with the aim to validate or updating bacteriological reference frames. The contaminations levels of the different eye banks have decreased from 2005 to 2008. Two corrective actions were performed: staff mobilization to ensure a safer procurement in order to lower the rate of contamination and germs identification to know the origins of contaminations.

In addition, since 2005, the contaminations with Staphylococcus species/strains have been identified as coming from the bain-maries during the media defrosting process. It thus seems urgent to take measures making it possible to decrease these contaminations rates responsible for the loss of 2010 corneas since 2005 approximately.

BACTERIOLOGICAL AND FUNGAL CONTAMINATION DECLARED TO 2005 TO 2008

CONTAMINATED PRODUCTS 2005-2008

| Year | Number of Contaminated Products | % of Contaminated Products
<table>
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<tr>
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<tbody>
<tr>
<td>2005</td>
<td>2100</td>
<td>87.2%</td>
</tr>
<tr>
<td>2006</td>
<td>2652</td>
<td>101.4%</td>
</tr>
<tr>
<td>2007</td>
<td>2083</td>
<td>78.3%</td>
</tr>
<tr>
<td>2008</td>
<td>1960</td>
<td>79.3%</td>
</tr>
</tbody>
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DISCUSSION – CONCLUSION

Since 2005, the contaminations with Staphylococcus species/strains have been identified as coming from the bain-maries during the media defrosting process. It seems urgent to take actions in order to decrease these contaminations rates which lead to the destruction of approximately 200 corneas since 2005.

Infections, regularly changing the water, packing medium in a hermetically bag before defrosting, wiping the bottles before use, disinfecting the bottle when opening, could reduce some simple measurements to improve.

TECHNIQUES USED IN 2008

- Blood culture bottle media (commercial available)
- Fungi media (commercial available)
- Sampling media (commercial available)