Scintica INSTRUMENTATION

Questions & Answers

WEBINAR: Validation of DEXA for Longitudinal Quantification of Tumor Burden in A Murine Model of Pancreatic Ductal Adenocarcinoma

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Questions and answers from the March 14, 2024 webinar titled "*Validation of DEXA for Longitudinal Quantification of Tumor Burden in A Murine Model of Pancreatic Ductal Adenocarcinoma*"

This document includes questions we received and answered during the webinar, as well as those that we did not have time to address.

1. **Would imaging subcutaneous tumors provide more detail and be able to track growth?**

   I don't necessarily know about more detail. I think it would essentially be a very similar analysis to what we do for the orthotopic model; it would equally measure in a subcutaneous model if that's what you're using in your lab. I don't think you'll have any difficulties translating it to that model. But in terms of any differences between the two, I think DEXA will be able to quantify that fairly equally between the two models and, that is something we're working on. We're working on some subcutaneous models now. So, I may have an update for that question in the coming months.

2. **On that same note, perhaps metastatic or xenograft models or even other cancers?**

Again, that's something we're working on right now. Really, the biggest thing is a transgenic model, so we use KPC mice in our lab. I have some data suggesting that you can monitor tumor growth in that model as well. One of the difficulties that we're working through with that model is that they tend to get much higher levels of ascites or fluid buildup in the abdominal region and that tends to mess with the DEXA measurements of lean mass. We're trying to find ways to overcome that. In terms of xenografts, I do think it would be a great way to monitor it. Most of them can be subcutaneous, but many of them are going to be orthotopic xenograft models. And we've already shown that orthotopic models are really nicely measured by DEXA, so I don't think we'll have any problem there. Again, we're trying to overcome some of the issues with the transgenic mice, but it's something we're working on.

3. **Any possibility that this methodology could be applied to the use of DEXA in human patients?**

That's one question that we also received from the reviewers when we were submitting the paper. It could be, but realistically, there are much better ways of monitoring tumor burden in the clinic, whether it's MRI or CT scans. They may be more expensive, but they're more readily used for the patients, and you get much better resolution with those models. I don't think DEXA will ever really translate to the clinic in terms of looking at tumor burden just because of what's already available. I do think it is an accurate measure of tumor growth but unfortunately, I don't think we'll ever see it in the clinic.

4. **Could you elaborate on how the upgraded analysis tools enhanced your data collection?**

Originally, the only thing we had were circles and rectangles on the PIXIMIS. Tumors aren't perfectly spherical. With the new tools we can trace the outline of the tumor. This is way better than a rectangle or ellipse or whatever we have to use. Additionally, this new machine has a semi-automated function where it snaps to the tissue and so after we draw a loose border around the tumor, when we click that button, it actually distinguishes between the low-density and the high-density pixels. And it'll outline that tumor burden for us. It even helps offset some of the bias on what we think is a tumor and what we think is not. And really helps the accuracy of the lean mass. And then in the lower limbs, being able to look at the whole lower limb instead of that rectangle, which is all we had previously. It just enhances the accuracy of the actual quantification that we're getting from DEXA.

5. **Could you build a 3D model of the xenograft tumors by taking images from multiple angles? Is this an idea you've had before or something you've tried?**

It's an idea that we've had. It's not something we've tried, but that was one of our thoughts for trying to get the best way to really quantify the tumor growth in our model. But as we were exploring, just looking at the side profile, we actually realized that this was a very accurate way of looking at the tumor size. We were going to take the side profile and the prone profile and try to in some way develop a formula to get a full 3D volume rendering of the tumor. It's something that we didn't continue because the side profile worked so well. I think it could be applied; it could be feasible. Something we thought of.

6. **Could you elaborate on your general thoughts on working with the with the machine?**

I love it. It's way better than the PIXIMUS. When I joined the lab, coming up on two years now, the first six months I was using the PIXIMUS all the time and any cohort of animals would take me all Thursday or all Friday to do. Now I can do that in 1/6 of the time and this gives me time to work on a lot of other things. For example, I can do a PCR on the same day as the DEXA now instead of having to devote a whole day to DEXA. Obviously, regarding the pictures, I think you had a good representation of that. The pictures are just way better than the PIXIMUS. This and the accuracy that we're getting from these mice now appears to be greatly enhanced from this machine.