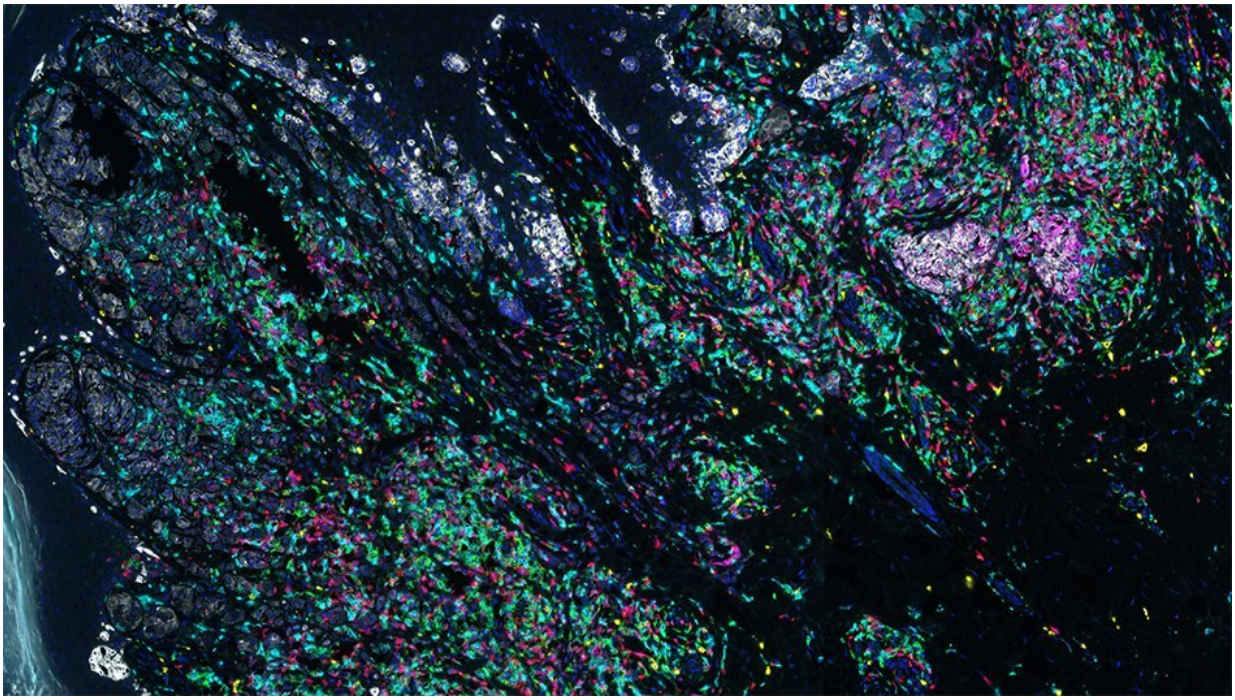
Five steps to improve access to cancer immunotherapies

November 25 2020, by Aislinn Santoni



Immune cells interacting with a tumour. Credit: David Mansfield

Most people are pretty familiar with the idea that our immune system can fight off invading bacteria and viruses, but the notion of it being effective against cancer is rather newer.

And the concept is in a sense a strange one. How, after all, can our immune system, primed as it is to attack foreign bodies, also work

against cancerous tumors made up of our own cells?

It turns out that our immune system is pretty good at dealing with cancer cells much of the time, spotting genetic differences that help to turn cells cancerous, and often mopping them up early before they ever get the chance to form tumors.

Sometimes, cancer can sneak under the radar, however, and avoid the attention of the immune system. That's when we need to give our natural immunity some help—which is where immunotherapies come in.

Several immunotherapies have shown spectacular responses in some patients which have led to great excitement among patients, cancer researchers and the pharmaceutical industry.

Here at the ICR, with our colleagues at The Royal Marsden, we have run clinical trials for several immunotherapy drugs, including pembrolizumab and nivolumab—which help the immune system to unmask cancers that have cloaked themselves—and a viral immunotherapy called T VEC which uses a modified herpes virus to burst open cancer cells from within.

Though immunotherapy is a relatively new approach to treating cancer, there are already several drugs licensed and available on the NHS for the treatment of cancer.

However, in order for immunotherapies to reach their full potential, we need to understand and overcome some existing barriers. Some of these relate to the holes in our knowledge about how immunotherapies work, and some to how we evaluate these treatments in clinical trials and interpret the evidence.

By working with our world-leading researchers, we have identified some

key barriers that we believe it is vital we overcome in order to ensure immunotherapies can reach their full potential.

We are feeling about in the dark a bit

In the early days of medical research, scientists developed drugs like aspirin empirically from natural sources, without having a very clear idea of how they work. Nowadays, we expect researchers to have a detailed understanding of the mechanisms of action of new drugs before they get anywhere near patients.

But interactions of medicines with our immune system are so complex that, when it comes to cancer immunotherapies, there is still an awful lot that we do not know. There is a lot of evidence now that shows that immunotherapies can work really well in certain cancer types, but these clinical advances have outpaced our understanding of the basic biology that determines which tumors do, and do not, respond to therapy.

We need much more research to understand how these treatments work, how to make them more effective and reduce side effects, and how best to identify the patients who will benefit the most and those most likely to experience significant harm. At the moment, clinicians can be somewhat in the dark when they try to get immunotherapy drugs to work better for patients or adapt them for use in new situations.

And once we know more about the basic biology underlying these medicines, we can identify which patients are most likely to benefit. That way we can create clinical trials which are tailored towards particular patients—generating good data of effectiveness more quickly. We would hope that these efficiencies will translate into savings for the NHS and faster availability of drugs for patients.

Data, data, data

To demonstrate that any treatment works, researchers have to gather evidence. Clinical trials are the ideal setting to collect patient samples, assess clinical data and learn more about how immunotherapies work in different situations.

We must not miss opportunities to collect information that may prove useful in understanding the underlying biology driving the successes or failures of immunotherapies in different groups of patients.

We need to optimize trial protocols to ensure we can collect samples whenever possible. Growing this body of samples and data will help us to create tests that predict how patients will respond to immunotherapies. This needs to happen not just in academically led trials but also those funded and led by industry as well.

By making sure that trials collect as many samples and as much data as is feasible, we can improve our understanding of immunotherapy and how to target it for patients—and learn even from those trials that on the surface of it have not produced positive results.

We need to reposition the goal posts

As we discover and develop newer and more innovative drugs for treating cancer, we need to recognize that these new drugs may not work in exactly the same way as the old ones did. Just as our understanding of cancer is continually evolving, so should the drugs we use to treat it.

Cancers behave very differently when they are treated with immunotherapy than with a conventional cytotoxic or cytostatic drug, for example. Cancer may respond quite slowly even to immunotherapies that

have been shown to be effective; sometimes, a tumor may even continue to grow at first. That presents a challenge in evaluating these treatments, given that early-stage trials will currently often judge effectiveness by how well a new drug slows cancer growth or causes a tumor to shrink.

The best way to assess the effectiveness of immunotherapies has not been fully worked out yet. We need to develop new and more appropriate clinical trial endpoints, because while overall survival benefit is always going to be the gold-standard measure, immunotherapies should not necessarily be assessed by the same standards as traditional cancer treatments—size of tumor, for example, may not be always an appropriate measure.

If we are able to develop endpoints that better reflect the way immunotherapies work, we will be able to get these medicines from bench to bedside much faster and make a huge impact on the lives of people with cancer.

Collaboration is key

In an industry where the ultimate goal is to find cures for cancer, you would expect that collaboration of all types is a no-brainer. However, currently the healthcare and pharmaceutical industries haven't quite nailed it.

In healthcare, we need to explore the potential of immunotherapies in combination with other treatments like radiotherapy. Research has shown that there are particular synergies between these treatments, however it is difficult to fully explore this as healthcare staff are often only trained as radiotherapists or immunotherapists with neither having much training in the other discipline.

To tackle this, we need to invest in cross-speciality training between

these two disciplines to share best practice and combat the challenges in current standards of care.

For the pharmaceutical industry, the collaboration issues are a little different. Once an immunotherapy treatment has been licensed on its own, there is very little incentive for drug companies to invest in a further trial to investigate how effectively it could work in combination with other treatments—especially treatments manufactured by other companies. We need to incentivise companies to run these trials where there is strong clinical data to take this burden away from academic institutions.

Don't be afraid of the unknown

As I said earlier, we don't have a perfect understanding of the biology underpinning the way immunotherapies work, or indeed how and why they can cause severe side effects in some patients. Our researchers are concerned that this uncertainty can cause regulators to view immunotherapies with excessive caution, and allow understandable worries over patient safety to overshadow the impressive benefits immunotherapies can bring.

There is a risk that we could end up suppressing innovations in patient care because of a fear of the unknown—especially when it comes to lesser-known and more 'exotic' forms of immunotherapy, such as viral immunotherapy, where regulators seem to be particularly risk averse.

It may seem a little scary to be using viruses in the treatment of cancer, especially in the middle of a pandemic, but in many ways it's not much different from many existing vaccines. Viral immunotherapy can use modified viruses—from measles to cough and cold viruses—to infect and kill cancer cells, and to spark the immune system into action against the rest of the tumor.

As with many things, communication is key, so we need to make sure we get regulators involved in discussions early so that they can better understand these therapies. We want to avoid unnecessary delays that prevent new cancer treatments from getting to those who need them most.

While the field of immunotherapy is incredibly exciting and developing rapidly, there are still a few hurdles to overcome in their research, approval and access.

Working out how to make immunotherapies more effective, and to target their use towards patients who will benefit most, is essential if they are to become established treatments for many more cancer patients.

Provided by Institute of Cancer Research

Citation: Five steps to improve access to cancer immunotherapies (2020, November 25) retrieved 4 July 2024 from https://medicalxpress.com/news/2020-11-access-cancer-immunotherapies.html