

## Unlocking Hope: Treating Patients with Lymphocytic Leukaemia Through CAR T-Cell Therapy



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In a groundbreaking achievement in Saudi Arabia, King Faisal Specialist Hospital and Research Centre (KFSHRC) has reached a significant milestone in the treatment of lymphoid leukaemia by successfully applying CAR T-cell therapy to a cohort of 100 patients. This remarkable success not only underscores the hospital's commitment to cutting-edge treatments but also positions Saudi Arabia as a beacon for specialised healthcare, aligning with the institution's vision to be the optimal choice for advanced medical care in the region.

### Revolutionising Treatment with CAR T-Cell Therapy

CAR T-cell therapy, a revolutionary approach in cancer treatment, involves harvesting a patient's own T-cells and genetically modifying them to express a receptor. This receptor, once integrated, identifies a specific protein on the cancer cell's surface, allowing the modified T-cells to selectively attach to and eliminate the cancerous cells.

### Enhancing Efficacy Through Low Dose Chemotherapy

The therapy is complemented by a low dose of chemotherapy, strategically administered to temporarily suppress the patient's immune system. This temporary suppression facilitates the unimpeded expansion of CAR-T cells without interference from the patient's immune response.

### A Resilient Alternative in the Battle Against Leukaemia and Lymphoid Tumors

In the realm of resistant leukaemia and lymphoid tumors, CAR T-cell therapy emerges as a promising alternative to conventional treatments. Its unique mechanism of action provides a distinct advantage, overcoming resistance mechanisms employed by cancer cells and thereby achieving a more effective response.

### Vigilant Monitoring Ensures Adaptation to Treatment

Post-infusion, patients undergo a meticulous monitoring process for four weeks, ensuring their adaptation to CAR T-cell therapy. Hospital stays of 14-21 days involve constant observation of vital signs, temperature, blood pressure, and cognitive function. Vigilance is paramount due to potential complications such as cytokine release syndrome (CRS) and transient neurological issues. Both complications are effectively managed, underscoring the hospital's commitment to patient safety.

### A Global Player in Specialised Healthcare

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The success in treating 100 patients with lymphoid leukaemia and lymphoma through CAR T-cell therapy epitomises KFSH&RC's vision to provide cutting-edge treatments and advanced therapeutic options. This achievement solidifies the KFSH&RC's reputation as a trusted choice for patients, their families, and healthcare payers, assuring them that the full spectrum of therapeutic options is available within the institution.

### **Reducing Burdens: Financial, Social, and Health Impact**

The application of CAR T-cell therapy has far-reaching effects beyond medical success. It significantly alleviates financial burdens, reduces delays in treatment delivery, and allows patients to receive care within their familiar support networks, ultimately contributing to positive overall treatment outcomes.

### **Collaborative Excellence: A Multidisciplinary Approach**

The integration of highly skilled medical, nursing, pharmaceutical, laboratory, and social specialists, coupled with a robust infrastructure, has positioned Saudi's healthcare system as a global player in offering advanced treatments like CAR T-cell therapy. The success in delivering this complex therapy to a significant number of patients highlights the hospital's capacity and capability.

### **A Key Component of Saudi Vision 2030**

In the context of Saudi Vision 2030, this achievement aligns seamlessly with the vision's healthcare objectives. By enhancing medical tourism and diversifying the economy, KFSHRC's success in CAR T-cell therapy aligns perfectly with the national agenda.

### **Overcoming Challenges: A Stepping Stone to Success**

Challenges in implementing CAR T-cell therapy, including negotiations with manufacturing companies, were met with resilience. The persistence of senior KFSH&RC haematologists played a pivotal role in convincing these companies of the hospital's ability to safely deliver CAR-T therapy.

### **A Glimpse into the Future: Advancements and Refinements**

Looking forward, the future of CAR T-cell therapy at KFSHRC is poised for significant advancements. The ultimate goal is to manufacture CAR-T cells within the institute, streamlining the treatment process. The vision includes expanding the therapy to other forms of cancer, exploring new targets, and initiating clinical trials for diseases beyond lymphoma and leukaemia, such as multiple myeloma.

In conclusion, KFSHRC's accomplishment in treating 100 patients with lymphoid leukaemia and lymphoma through CAR T-cell therapy represents a transformative leap in healthcare. It signifies not only a triumph over complex medical challenges but also positions the hospital as a global leader in specialised medical care.

### **Conflict of Interest**

None

Published on : Wed, 13 Dec 2023