

A Knowledge Sharing Initiative by Medanta

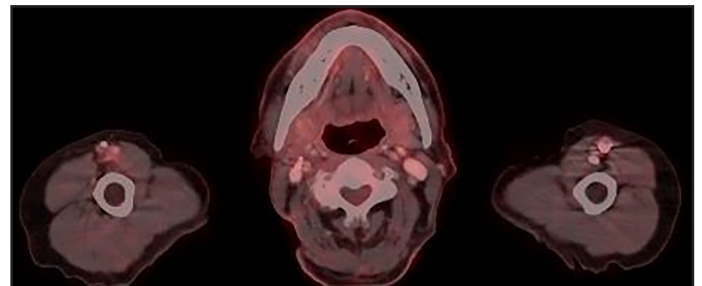
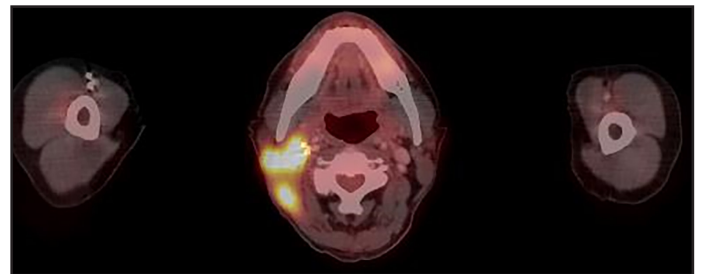
NexCAR19 Shows Efficacy in Refractory Lymphoma, Remission Achieved Despite Multiple Complications

Diffuse Large B-Cell Lymphoma (DLBCL) is the most common type of fast-growing (high grade) non-Hodgkin lymphoma (NHL). It requires immediate treatment, starting with chemotherapy, often the R-CHOP regimen (rituximab, cyclophosphamide, doxorubicin, prednisolone). Many patients respond well to this regimen, but for about a third of them the disease either resists initial treatment (refractory) or returns after treatment (relapsed). Such cases require use of advanced treatments.

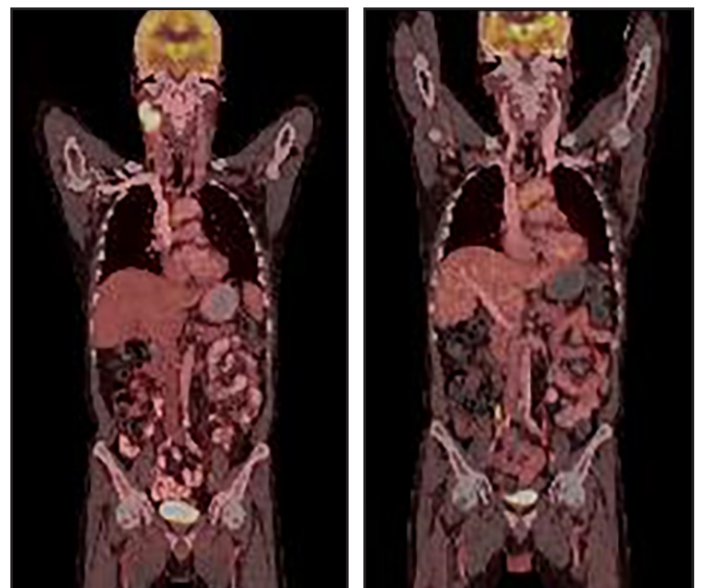
For patients, whose cancer doesn't respond to first-line treatments like R-CHOP, additional therapies are available. Options include other chemotherapy combinations or targeted therapies, such as Polatuzumab or even stem cell transplants. Some patients may also explore clinical trials. For certain patients, however, CAR T-cell therapy offers a promising alternative.

CAR T-cell therapy, as evidenced by studies like ZUMA-1 and JULIET, has shown significant success in achieving remission in relapsed or refractory DLBCL, with over half of patients achieving complete remission. In India, NexCAR19, developed by ImmunoACT in collaboration with IIT-Bombay and Tata Memorial Centre, targets CD19 on cancer cells and has demonstrated promising results in clinical trials for blood cancers, gaining Drug Controller General of India (DCGI) approval in 2023.

While CAR T-cell therapy does carry some risks and side effects, it is considered safe as long as the side effects are managed timely. The side effects include Cytokine Release Syndrome (CRS)—an acute systemic inflammatory syndrome characterised by fever and multiple organ dysfunction, neurological problems such as immune effector cell-associated neurotoxicity syndrome (ICANS), confusion or headaches, difficulty in speech or deterioration in handwriting, and in rare cases, potentially fatal seizures and cerebral oedema are possible if not controlled with medications. Other side



A computerised axial tomography (CAT) scan showing a cross-section image of diseased lymph nodes from February 2024. Consequent CAT scan from October 2024 showing no evidence of active disease indicating remission.



A full body CAT scan before and after the patient was given CAR-T Cell Therapy.

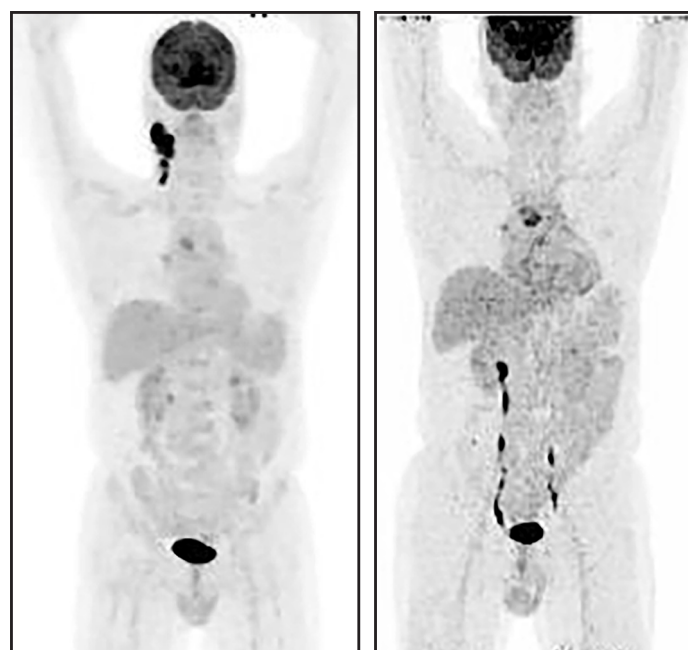
effects include low blood count, infections, and in rare cases, death. These side effects typically occur soon after treatment and are closely monitored in the hospital.

We present the case of a patient with advanced-stage Diffuse Large B-Cell Lymphoma (DLBCL) who was referred to Medanta Gurugram's Division of Bone Marrow Transplant after failure to achieve remission despite five lines of therapy.

Case Study

In February 2022, a 56-year-old man was diagnosed with an advanced stage of Diffuse Large B-Cell Lymphoma (DLBCL), a type of fast-growing non-Hodgkin lymphoma. At the time of diagnosis, his cancer was already Stage-IV and classified as non-GCB type—a subtype known for its aggressive nature. He began treatment immediately, undergoing six cycles of R-CHOP chemotherapy, which is the first-line regimen for DLBCL. While he initially showed a partial response, his cancer remained resilient, and further treatments were required.

Over the following months, he received several additional treatments, including combinations of other chemotherapy drugs such as GDP (gemcitabine, dexamethasone, cisplatin), iR2 (ibrutinib, lenalidomide, and rituximab), and R-ICE (rituximab and the chemotherapy drugs ifosfamide, carboplatin, and etoposide phosphate), along with immunotherapy agents including Brentuximab. Each regimen offered only temporary or partial improvement, with his disease continuing to progress.



A MIP PET image (left) showing active disease when the patient first presented at Medanta. (Right) A full body MIP PET scan showing no evidence of active disease after getting CAR T-cell therapy.

After none of these therapies helped achieve remission in the patient, he was referred to Medanta Gurugram's Division of Bone Marrow Transplant for further management.

The patient presented with relapsed DLBCL confirmed by biopsy and was started on Polatuzumab to prepare for CAR T-cell therapy.

By June 2024, he had shown a good response to Polatuzumab, with clinical exams showing that his lymph nodes were no longer palpable. After full evaluation, the haemato-oncology team started collecting his T-cells in preparation for the CAR T-cell manufacturing process.

However, after production, the dose yielded was only 3 million cells per kilogram—a suboptimal amount for effective treatment. After discussing the limited options, including another potential cell harvest, the patient and his family decided to proceed with the available dose, knowing this might be the only chance to try CAR T-cell therapy.

Complications Before CAR T-Cell Infusion

However, in early September, just before the CAR T-cell infusion, the patient was diagnosed with pericardial tuberculosis (TB), a rare and serious condition affecting the heart's outer lining. The treatment required the use of anti-tuberculosis therapy (ATT), but he developed liver toxicity as a side effect, complicating his preparation for CAR T-cell therapy. His medications were adjusted to manage the liver toxicity, and his condition gradually improved. With the tuberculosis under control, he was admitted in mid-September for CAR T-cell therapy.

Infusion and Recovery

From September 19 to 21, the patient underwent a conditioning regimen with Fludarabine and Cyclophosphamide, which helped suppress his immune system and create a favourable environment for the CAR-T cells to be effective.

On September 24, 2024, he received his CAR T-cell infusion—a carefully monitored procedure given the therapy's potential for significant side effects. The infusion proceeded without any immediate complications, and on Day 16 since admission he was discharged from the hospital.

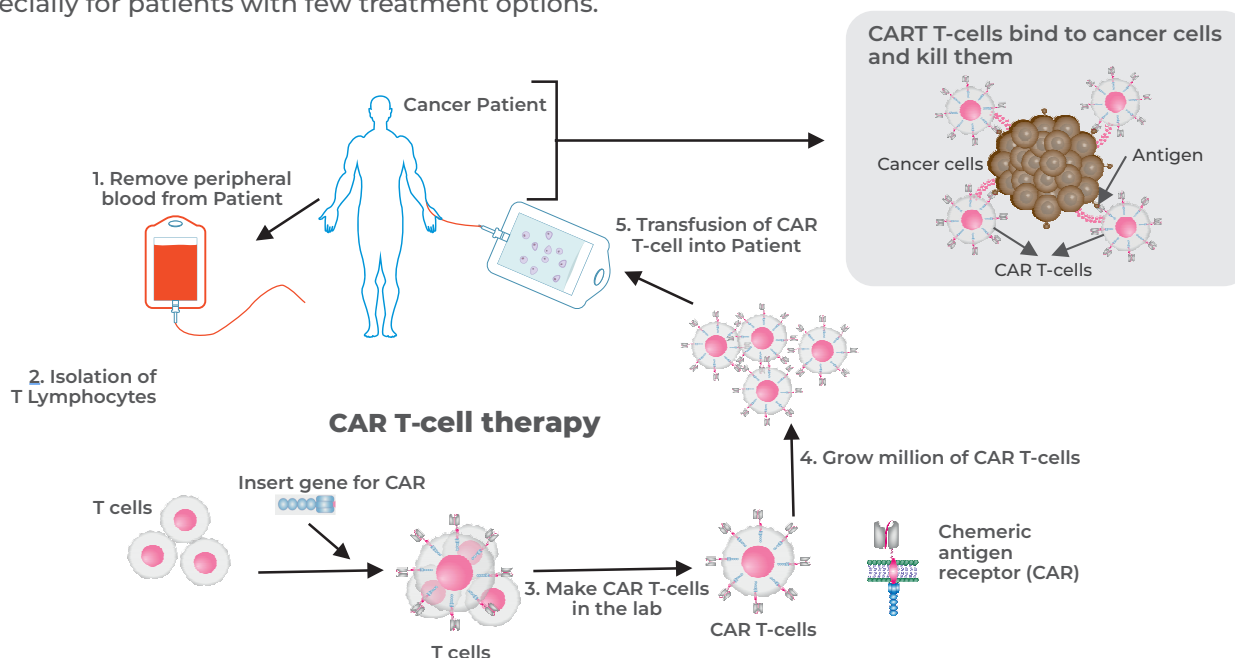
Results and Follow-up

Over the next few weeks, the patient continued to improve, and his progress was monitored on an OPD basis.

During his one-month follow-up, the PET scan showed no evidence of active disease—an extremely positive outcome for a patient who had previously been

How CAR T-Cell Therapy Works

CAR T-cell therapy is an advanced immunotherapy that uses a patient's own T-cells, genetically engineered to recognise and attack cancer cells more effectively. After the T-cells are modified, they are re-infused to find and destroy cancer cells. This therapy has shown great promise, especially for patients with few treatment options.



unresponsive to multiple lines of therapy. His ongoing tuberculosis treatment continued to be monitored, but overall, he showed signs of remission and improvement in quality of life.

Conclusion

This case highlights the potential of CAR T-cell therapy to offer hope and remission even in the most challenging cases of refractory lymphoma.

Our patient's journey reflects the complex decision-making and careful coordination required for CAR T-cell therapy, especially in patients with advanced cancer and other medical complications. His successful response underscores the potential of CAR T-cells to achieve remission for patients with limited options, and it serves as an example of how new treatments can provide life-saving outcomes even in difficult cases.

Early diagnosis, timely referral, and proactive management of complications are vital for advanced DLBCL. Peripheral doctors should monitor disease closely, address comorbidities, and stay informed about emerging therapies like CAR T-cell treatment to improve outcomes.

Medanta Gurugram stands out as an ideal centre for CAR T-cell therapy, offering a multidisciplinary team of

experts, and holistic patient care with advanced toxicity and infection management for successful outcomes in refractory and relapsed cases.

Dr. Bhaarat

Consultant - Medical Oncology
Medanta - Gurugram



Dr. Nitin Sood

Senior Director - Medical Oncology
and Bone Marrow Transplant
Medanta - Gurugram



Dr. Manisha Jain

Consultant - Medical Oncology
Medanta - Gurugram



Dr. Tejasvini Vaid

Consultant - Medical Oncology
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Medanta@Work

AchR+ Myasthenia Gravis Showing Ocular Symptoms Managed with Rituximab

Myasthenia gravis (MG) is an autoimmune disorder caused by antibodies against acetylcholine receptors at the neuromuscular junction. It is characterised by fluctuating muscle weakness primarily affecting the eye muscles, leading to ptosis and diplopia. Ocular involvement is common, usually presenting with limb weakness and bulbar palsy and that too with fluctuations in symptoms i.e. evening worsening. But it can present in unusual ways, complicating diagnosis and management.

While typical presentations are well-documented, we report a unique case of generalised myasthenia gravis in a 55-year-old female with atypical symptoms and significant diagnostic challenges with complete recovery with rituximab. This case highlights an atypical manifestation of generalised myasthenia gravis, emphasising the importance of considering the full spectrum of symptoms.

Case Study

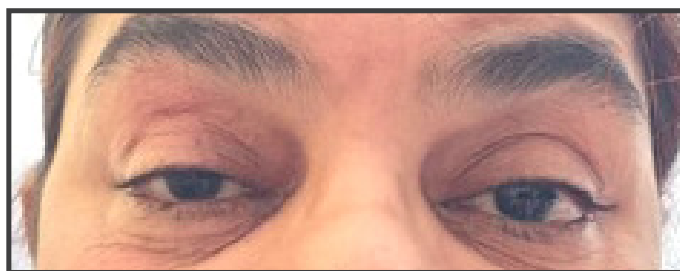
A 55-year-old female presented to Medanta Lucknow's Institute of Neurosciences with complaints of double vision and complete drooping of eyelids over the past one month. Notably, her symptoms were not worsened by evening and there were no fluctuations in her symptomatology, and improved with rest. She denied other neurological symptoms, such as limb weakness or bulbar involvement.

On examination, the patient exhibited bilateral complete ptosis, and inability to open her eyes with complete ophthalmoplegia leading to no movement of eyeballs and fixed gaze. Tests, including the Ice Pack Test done in the OPD, showed significant improvement in her bilateral ptosis indicating neuromuscular channel defect. The patient's history revealed no prior autoimmune disorders, and she was not on any medications that could cause similar symptoms.

But as the patient had complete ophthalmoplegia magnetic resonance imaging (MRI) of the brain and orbits was done to rule out other causes of ocular symptoms, revealing no structural abnormalities. A serological test for myasthenia gravis panel was sent. It showed strongly positive acetylcholine receptor (AChR) antibody levels and negative muscle-specific kinase (MuSK) antibodies confirming the



Before ice pack test



After ice pack test

diagnosis of AChR-positive myasthenia gravis. A repetitive nerve stimulation test showed a decremental response, consistent with myasthenia gravis.

The patient was initiated on a regimen of pyridostigmine and subsequently received immunotherapy with corticosteroids but it did not show any improvement in her symptoms. We gave her IVIG therapy for five days after which her ptosis improved partially, and from complete ophthalmoplegia, she started to have some movement of the eyes.

We counselled the patient for immunotherapy and gave the option for azathioprine/MMF whose action would become evident after three to four months, and rituximab whose effect would be seen in three to four weeks. The patient gave consent for rituximab and we infused two doses of rituximab two weeks apart. After 1 month, when the patient came to the OPD she had complete recovery in her ptosis and ophthalmoplegia.

Gradually over the next one month her pyridostigmine and steroids were tapered and stopped. Now, the patient is not on any treatment with a plan to repeat rituximab after six months if required by watching her CD4 levels.

This case shows the use of rituximab not only in MuSK antibody-positive myasthenia gravis but also in generalised myasthenia gravis where there is poor response to pyridostigmine and steroids. Also, it helps in early tapering and cessation of steroids therapy and safeguards the patients from long-term side effects of steroids.

Conclusion

Early diagnosis and treatment of myasthenia gravis are crucial because if left untreated, it can progress and lead to respiratory

compromise. This case illustrates the importance of recognising atypical presentations of generalised myasthenia gravis with only ocular symptoms, that too in severe form with complete ophthalmoplegia and complete bilateral ptosis. The presence of acetylcholine receptor antibodies and the negative MuSK antibody result highlight a subgroup of generalised myasthenia gravis that can present with isolated ocular symptoms rather than generalised symptoms and that too rarely without any fluctuations. Continued research into the pathophysiology and treatment of atypical myasthenia gravis presentations remains vital for improving patient outcomes.

Learning Points:

- Ice pack test is a simple test that can be done in the OPD. It is helpful test in recognising myasthenia gravis.
- This unusual case of generalised myasthenia gravis with only severe ocular symptoms and patients showing poor improvement with pyridostigmine and steroids underscores the need for clinicians to be aggressive in therapy.
- Using therapy like rituximab in selected patients of generalised myasthenia gravis helps them in faster recovery and helps avoid the long-term side effects of steroid use.
- Such patients only need booster dose of rituximab every six months, depending on CD19 levels, and remain disease-free without the use of any oral medicines.

These cases can be managed at centres well-equipped with neurophysiology lab to do the diagnostics and dedicated neurology departments. If any patient, diagnosed with myasthenia gravis,



One month after receiving rituximab

does not show improvement with the conventional approach of using steroids and pyridostigmine, they should be referred to higher centres of medicine. Sometime if the tests come negative for myasthenia gravis, and the clinician is faced with a diagnostic dilemma, then the patient should be referred to hospitals with dedicated neurology department.

Dr. Vibhor Upadhyay

Consultant - Neurology

Medanta - Lucknow



Dr. Anup Kumar Thacker

Director - Neurology

Medanta - Lucknow



Medanta Lucknow Launches UP's First 5G Ambulance



Medanta Lucknow has launched Uttar Pradesh's first 5G-enabled ambulance. The initiative, taken on the 5th anniversary of the tertiary care centre is set to transform emergency care delivery in the state with high-speed internet connectivity and real-time data transfer facilities ensuring super-specialist support even in transit.

The ambulance was flagged-off in a ceremony on 25th November 2024, presided over by Dr. Rakesh Kapoor, Medical Director of Medanta Hospital Lucknow and Mr Prabhdeep Singh, Founder and CEO of RED.Health - India's largest and Asia's only JCI-accredited emergency medical response platform.

As part of the tie-up, the 5G ambulance at Medanta Hospital Lucknow will be staffed by skilled paramedics and equipped with advanced life-saving equipment, real-time patient monitoring systems, and a direct communication link with Medanta's emergency specialists. This seamless integration, powered by 5G connection, will allow for immediate medical intervention and stabilization, improving survival rates and outcomes for patients before they even reach the hospital.

Commenting on the partnership, Dr. Rakesh Kapoor, the Medical Director at Medanta Lucknow, stated, "The 5G-enabled ambulance reflects Medanta's dedication to enhancing healthcare with latest technology. Every emergency is a race against time. This 5G-enabled ambulance transforms vehicles into mobile emergency rooms. The real-time connectivity ensures that life-saving decisions can be made instantly, with specialist consultation available from the moment our teams reach the patient. We are proud to bring this revolutionary emergency care model to Lucknow."

This emergency service can be availed by calling 1068 anytime.

Spotlight

North Zone AROICON 2024 Focuses on Management of Oligometastatic Disease



The North Zone AROICON 2024 conference was held at Medanta Gurugram's Cancer Institute centered on the critical and evolving theme of 'Management of Oligometastatic Disease'. It addressed the unique therapeutic challenges and opportunities that Oligometastatic disease presents, bridging the fields of radiation oncology, surgery, and systemic therapies. The event brought together leading oncologists, clinicians and residents to discuss the latest advancements, treatment protocols, and multidisciplinary approaches shaping outcomes in this rapidly progressing field.

The conference started with a welcome note by Dr Tejinder Kataria (Chairperson – Radiation Oncology, Cancer Institute, Medanta) followed by lighting of the lamp in the presence of chief patron Dr Naresh Trehan (Chairman and Managing Director, Medanta), Dr Manoj Gupta (President AROI), Dr Neeraj Jain (President NZ-AROI) and Dr Pradeep Garg (Secretary NZ-AROI).

In his address, Dr Trehan encouraged the younger generation to take up predictive and prognostic oncology to determine the best treatment outcomes for cancer patients. Dr Manoj Gupta, President AROI, delivered the prestigious Prof. B. D. Gupta Oration, focussing on the pressing concerns surrounding rising cancer incidence and the critical gap in radiotherapy infrastructure across the nation, especially rural areas as majority of this population come from there.

Sessions focused on the application of stereotactic body radiotherapy (SBRT) in oligometastatic settings. SBRT's precision and effectiveness in targeting limited metastatic lesions were highlighted as transformative for patients who might benefit from aggressive local treatment rather than traditional palliative care.

Kudos



Dr. Neelam Mohan

Senior Director and HOD - Gastroenterology, Liver Transplant
Medanta Gurugram

Appointed as **National President-Elect 2025**
of the **Indian Academy of Paediatrics**



Dr. Ajay Kumar Sinha

Director - Cardiology, Cardiac Care
Medanta Patna

Honoured with **National Award of Excellence in Cardiology**
by The American Association of Cardiologists of Indian Origin,
International Society of Cardiovascular Ultrasound, WHA,
World Wellness Foundation

Dr. Shipli Gupta

Consultant - Microbiologist
Department of Pathology and Laboratory Medicine
Medanta Indore



Felicitated by AIIMS-Bhopal
in recognition of contribution towards
diagnosing Melioidosis in Madhya Pradesh

Welcome Onboard



Dr. Kunal Kumar

Associate Director - Neurology
Medanta - Patna

Dr. Kumar specialises in treatment of brain strokes, all types of headaches, seizures, epilepsy, Parkinson's disease, migraine, neck and back pain. He has special interest in sleep disorders such as sleep apnea.



Dr. Rajendra Kumar Chaurasia

Associate Director - Ophthalmology
Medanta - Lucknow

Dr Chaurasia's areas of expertise are neuro-ophthalmology, uveitis, ocloplastic surgeries, glaucoma surgeries (trabeculectomy, laser peripheral iridotomy), phacoemulsification with premium intraocular lenses (toric, multifocal and Edof), and anterior segment diseases.



Dr. Bharat Sangal

Consultant - GI Surgery, GI oncology and Bariatric Surgery
Medanta - Lucknow

Extensively trained in advanced gastrointestinal and hepatopancreatobiliary (open and laparoscopic) surgeries, advanced endoscopic procedures (ERCP, Spy glass), management of complications of gall bladder surgery (bile leak, biliary stricture, retained stones, missed malignancy etc), bariatric surgery, hepatobiliary and GI oncosurgery, reoperative surgery.



Dr. Anil Jaiswal

Consultant - Nephrology and Kidney Transplant Medicine
Medanta - Patna

Dr. Jaiswal brings extensive training in managing all types of glomerular diseases, kidney transplantation and associated complications, kidney biopsies and permanent HD catheter placement.



Dr. Pooja Aggarwal

Senior Consultant - Dermatology
Medanta - Gurugram

With over 14 years of experience as a dermatologist, trichologist, dermatosurgeon, and aesthetic physician, Dr Aggarwal specialises in clinical, pediatric and aesthetic dermatology, and dermatosurgery. She manages a wide range of skin, hair, nail, and mucosal conditions, including psoriasis, pemphigus, eczema, urticaria, acne, pigmentation disorders, hair loss, and drug reactions, treating patients of all age groups.



Dr. Abta Yadunandan Bachchan

Consultant - Neurosurgery
Medanta - Patna

A neurosurgeon specializing in brain and spine surgery (microscopic and endoscopic), Dr Bachchan is skilled at a wide range of neurosurgical procedures for Brain Tumor, Pituitary Adenoma, traumatic brain injury, spinal trauma, spinal dysraphism repair, and cerebrovascular accident management.



Dr. Sourav Kumar Mishra

Consultant - Interventional Cardiology
Medanta - Lucknow

Expert in primary angioplasty with stent placement, pacemaker implantation, stenosed or regurgitating heart valves, treatment of heart failure, hypertension, hypertrophic cardiomyopathy and congenital heart diseases with special interest in rotablation, intravascular lithotripsy, intravascular imaging, left main coronary artery interventions, CTO and bifurcation stenting. He also specialises in cardiological non-invasive diagnostic procedures (ABPM, Holter monitoring, TMT, 2D transthoracic and transesophageal Echo).





Dr. Anita Bisht

Associate Consultant - Ophthalmology
Medanta - Gurugram

Dr Bisht specialises in cataract surgery with monofocal, multifocal, trifocal, toric lens implantation, Lasik surgery, photorefractive keratectomy and keratoconus management.



Dr. Yatharth Bhatia

Consultant - Dental Sciences
Medanta - Gurugram

Dr. Bhatia specialises in full mouth rehabilitation and dental implants, offering comprehensive restoration through bonded restorations and custom smile design veneers to restore both function and aesthetics.



Dr. Shyam Mohan

Associate Consultant - Interventional Cardiology
Medanta - Gurugram

Dr. Mohan specializes in coronary angioplasty, temporary pacemaker implantation, coronary angiography, advanced imaging techniques like IVUS and OCT. His focus areas also include managing complex cardiac conditions, treating heart failure and arrhythmias.



Dr. Amit Kumar

Associate Consultant - Internal Medicine
Medanta - Ranchi

Dr. Amit Kumar specialises in medical management of diabetes, hypertension, thyroid disease, complex and chronic diseases of the liver, and infectious diseases.



IN CASE OF **EMERGENCY** DIAL **1068**

Medanta Network

Hospitals

Medanta - Gurugram

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info@medanta.org

Medanta - Lucknow

Sector - A, Pocket - 1, Sushant Golf City,
Amar Shaheed Path, Lucknow | Tel: 0522 4505 050

Medanta - Patna

Jay Prabha Medanta Super-Speciality Hospital,
Kankarbagh Main Road, Kankarbagh Colony, Patna
Tel: 0612 350 5050

Medanta - Ranchi

P.O. Irba, P.S. Ormanjhi, Ranchi | Tel: 1800 891 3100

Medanta - Indore

Plot No. 8, PU4, Scheme No. 54, Vijaynagar Square,
AB Road, Indore | Tel: 0731 4747 000

Mediclinics

Defence Colony

E - 18, Defence Colony, New Delhi | Tel: 011 4411 4411

Cybercity

UG 15/16, DLF Building 10 C, DLF Cyber City,
Phase II, Gurugram | Tel: 0124 4141 472

Subhash Chowk

Plot No. 743P, Sector - 38, Subhash Chowk,
Gurugram | Tel: 0124 4834 547

Cyber Park

Shop No. 16 and 17, Tower B, Ground Floor, DLF
Cyber Park, Plot No. 405B, Sector-20 Udyog Vihar,
Gurugram | Tel: 93541 41472

Medanta Helpline: 8904395588

medanta.org

Upcoming Hospital: Noida