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CLINICAL PHARMACY NEWSLETTER

A Newsletter of Drug and Prescribing Information
Published by
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(A Unit of Department of Pharmacy Practice, JSS College of Pharmacy, Ooty)

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INSIDE THIS ISSUE

HIGH LIPOPROTEIN(A) LEVELS IN TYPE 1 DIABETES ADD TO CVD RISK

In an observational registry study of Swedish outpatients with type 1 diabetes, those who had high plasma lipoprotein(a) [Lp (a)] levels — defined as >120 nmol/L or approximately 50 mg/dL — were more likely to have albuminuria, calcified aortic valve disease, or a composite measure of cardiovascular disease. And patients whose blood glucose level (A1C <6.9%) was well controlled had lower Lp(a) levels. The identified CVD risk level for Lp(a) of 120 nmol/L and the association between Lp(a) and aortic valve disease are novel findings for patients with type 1 diabetes. These results show that high levels of Lp(a) in patients with type 1 diabetes add to already elevated risk of developing cardiovascular disease. Levels of these blood lipids should therefore be measured and should form part of total risk assessment. Because there is currently no readily available therapy to effectively lower Lp(a) levels, treatment of all other risk factors for cardiovascular disease should be optimized for patients with type 1 diabetes and high levels of lipoprotein(a).

Lp(a) Levels in Type 1 Diabetes

Plasma Lp(a) levels are largely determined by genes and ethnicity and are much less affected by age, gender, or diet. High Lp(a) levels (>120 nmol/L or approximately 50 mg/dL) are associated with a significantly increased risk for coronary heart disease, calcified aortic valve disease, and peripheral artery disease. In one other recent study, having type 2 diabetes and high Lp(a) levels was associated with a 3.5-fold higher risk for a cardiovascular event compared to having no diabetes or a low Lp(a) level (<24 nmol/L or approximately 10 mg/dL) (Jin JL et al. Diabetes Care. 2019;42:1312-1318). To study this relationship in type 1 diabetes, they identified 1860 outpatients with type 1 diabetes who were seen in their hospital clinic from August 2017 to October 2018 and who underwent testing to determine plasma Lp(a) levels. The median age of the patients was 48 years, and they had diabetes for a median of 25 years. The cohort included slightly more men (56%) than women. Although most patients (69%) had never smoked, 18% were current smokers, and 13% had smoked in the past. The patients' median A1C level was 7.7%. A third of the patients had very low plasma Lp(a) levels (<10 nmol/L); 27% had low levels (10 – 30 nmol/L); 23% had intermediate levels (30 – 120 nmol/L), and 16% had high levels (>120 nmol/L). Few patients had coronary heart disease (6.9%), cerebrovascular disease (3.4%), calcified aortic valve disease (4.7%), or diabetic foot disease (a surrogate for peripheral artery disease; 4.1%); 13% had albuminuria. After correcting for age and smoking, compared to patients who had very low levels of Lp(a), those with high Lp(a) levels were significantly more likely to have calcified aortic valve disease (adjusted risk ratio, 2.03), diabetic foot ulcer (1.51), albuminuria (1.68), or a composite of coronary heart disease, cerebrovascular disease, and diabetic foot ulcer (1.51). The researchers acknowledge that study limitations include the fact that it was observational, so it cannot show cause and effect. In addition, only nine patients exhibited overt cardiovascular disease, and for 5% of patients, Lp(a) measurements were made in a different laboratory using a test other than an immunoassay.

Antisense Oligonucleotide, a Potential Future Therapy?

Lp(a) is emerging as a clinically important target with new pharmacologic treatments with antisense oligonucleotides currently being developed to significantly reduce Lp(a) levels. As previously reported, promising phase 2b trial results of antisense oligonucleotide AKCEA-APO(a)-LRX were presented. Such a therapy would, if proven effective and safe, possibly be a treatment option for this patient group with [type 1 diabetes and] high inherent CVD risk.

Ref: https://www.medscape.com/ viewarticle/923192

METFORMIN MAY HELP KEEP DIABETES AT BAY, BUT NO MORE SO THAN INTENSIVE DIET AND EXERCISE

Metformin may help prevent or delay the onset of type 2 diabetes in high-risk adults, suggest results of a Cochrane review.

Researchers from University of Copenhagen reviewed 20 randomized trials with 6,774 total patients. The trials compared Metformin to any pharmacological glucose-lowering intervention, behavior-changing intervention, placebo, or standard care in patients with impaired glucose tolerance or fasting glucose, moderately elevated glycosylated hemoglobin A1c (HbA1c), or a combination of these conditions. The intervention period varied from one to five years; none was judged to be at low risk of bias.

Fifteen studies compared Metformin against a diet-and-exercise intervention, eight compared Metformin against intensive diet and exercise and three compared Metformin plus intensive diet and exercise against intensive diet and exercise only. When compared with placebo or standard diet and exercise, Metformin significantly reduced or delayed onset of diabetes those at risk based on moderate-quality evidence (relative risk, 0.50; $P<0.001$), the researchers found. However, when compared with an intensive diet-and-exercise program, Metformin did not provide any added benefit in reducing or delaying development of diabetes (moderate-quality evidence). Combining Metformin with intensive diet and exercise (compared to intensive diet and exercise alone) showed neither an advantage nor disadvantage regarding the development of diabetes (very low-quality evidence).

Seven studies compared Metformin with another glucose-lowering agent. There was neither an advantage or disadvantage when comparing Metformin with acarbose (three studies) or a thiazolidinedione (three studies) with respect to the development of diabetes. One study compared Metformin with a sulphonylurea but the trial did not report patient-important outcomes. In general, the reporting of serious side effects was sparse. Few participants died and did not detect a clear difference between the intervention and comparator groups. Also did not detect an advantage or disadvantage of Metformin in relation to health-related quality of life. Data were sparse or unavailable on mortality, macrovascular and microvascular diabetic complications, and health-related quality of life. All of the included studies had problems in the way they were conducted or reported.

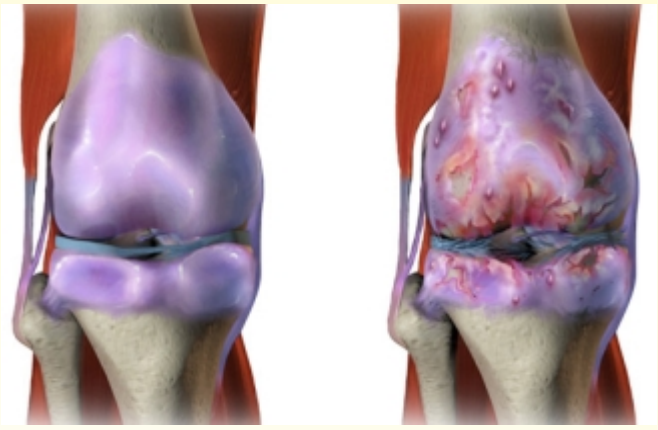
Future studies should investigate more patient-important outcomes such as complications of diabetes and especially the side effects of the drugs. They identified 11 ongoing trials that might provide more data on the topic. These trials will add a total of 17,853 participants in future updates of this review.

Ref: https://www.medscape.com/viewarticle/922908

MIXED RESULTS FOR NOVEL DRUG FOR OSTEOARTHRITIS

NMIV-711, a potent, selective cathepsin K inhibitor, was no better than placebo in relieving pain related to knee osteoarthritis in a randomized, placebo-controlled, phase 2a study. However, the drug led to a significant reduction in bone and cartilage progression.

The potential disease-modifying effect of MIV-711 is "exciting" and reflects a "pivotal step forward in the quest for agents capable of slowing or arresting the pathologic processes leading to joint destruction. Participants included 244 patients with primary knee osteoarthritis, Kellgren-Lawrence grade 2 or 3, and pain score of 4 to 10 on a numerical rating scale (NRS). They were randomly allocated to MIV-711 100 mg daily (82 patients) or 200 mg daily (81 patients) or matching placebo (77 patients) for 26 weeks. Forty-six patients in the 200 mg MIV-711 group and four in the placebo received 200 mg of MIV-711 daily during a 26-week open-label, safety extension sub-study.



Osteoarthritis Representational Image

There was no statistically significant change in NRS pain score (the primary outcome) between MIV-711 and placebo. Patients in both active treatment groups and the placebo group reported substantial improvement in pain and functional status, with the active groups reporting slightly more improvement than the placebo group. However, the between-group differences in pain relief did not reach statistical significance; did not show a dose response (the 100-mg group had more pain relief than the 200-mg group); and did not appear to be clinically meaningful, with differences in pain relief between the active groups and placebo group of 0.1 to 0.3 point on the 10-point NRS. However, changes in disease progression assessed using quantitative MRI clearly favored MIV-711. Compared with placebo, MIV-711 significantly reduced medial femoral bone area progression (P=0.002 for 100 mg/d and P=0.004 for 200 mg/d) and medial femoral cartilage thinning (P=0.023 with 100 mg/d and P=0.125 for 200 mg/d).

Treatment with MIV-711 was also associated with sustained reductions in biomarkers of bone resorption (CTX-I) and cartilage loss (CTX-II), which correlate with progression of osteoarthritis. MIV-711 had an "acceptable" and "reassuring" safety profile through the 26-week extension sub-study. There were nine serious adverse events in six participants (three in the 100-mg group, two in the 200-mg group, and one in the placebo group. None were considered treatment-related.

Further evaluation of MIV-711 in longer and larger trials to confirm the structural benefits observed here and whether these translate to more tangible benefits on symptoms is warranted. Researchers also expressed that “still don't quite understand where the pain comes from in an osteoarthritic knee”. There are likely a number of tissues important in producing pain, including the damaged bone adjacent to the joint, inflamed joint lining tissue (called synovitis, caused by shedding of bone and cartilage molecules), and where the tendons attach around the knee. By slowing the bone and cartilage damage within the joint; it may be able to help some of the causes of pain (damaged bone and synovitis), but any effects on pain would likely only follow months after reducing the damage progression.

The next step is a larger trial to follow people for a longer period of time. Also, need to focus on only including patients with moderate to severe pain to optimize chances of showing a difference. More research is needed to determine the longer-term benefits of MIV-711. And the study findings do not contradict the "foundational link between modification of structure and improvement in osteoarthritis pain, but rather clarify that changes in structure do not beget immediate changes in symptoms. Structural changes occur "well ahead" of symptoms, and these data suggest that longer follow-up will be required to test whether the structural benefits of MIV-711 are indeed accompanied by clinically important improvements in pain and function.

Ref: https://www.medscape.com/viewarticle/923233

NUTRITION STRATEGIES FOR ANXIETY REDUCTION

Anxiety disorders are the most common psychological disorders in the United States, according to the National Institute of Mental Health. That's 40,000,000 adults—18 percent of the population — fear-producing. Anxiety and depression are frequently associated with anxiety in roughly half of those with depression.
Specific treatments and medications can help reduce the burden of anxiety, but only about one third of those who need care for this disorder.

In addition to sound recommendations including a healthy diet, a adequate supply of water to remain hydrated and alcohol and caffeine control or avoidance, many other dietetic factors may help reduce the anxiety. Of example, the gradually metabolization of complex carbohydrates helps to maintain a fairer blood sugar level, producing a more relaxed feeling.

A diet rich in whole grains, plants and fruit is more nutritious than a lot of simple carbohydrates in processed food. It's important when you eat. Don't miss meals. Don't forget meals. This can lead to drops in blood sugar, which can make you feel sick, which can exacerbate your underlying conceThe gut-brain axis also is very important, because in the gut lining there is a significant percentage (approximately 95%) of serotonin receptors. The potential of probiotics for both anxiety and depression is investigated in research.

Consider them a part of your anxiety diet,you may be surprised to learn that certain foods have demonstrated anxiety reduction. Diets that are low in magnesium have been identified in mice to increase the behavior associated with anxiety.

Naturally magnesium-rich foods can thus make a person feel calmer. The leafy greens, like spinach and swiss chard, are examples of them. Additionally, vegetables, nutes, seeds and whole grains are included. Zinc-rich foods like oysters, cashews, liver, beef and egg yolks have been linked with decreased anxiety. Many foods contain omega-3 fatty acids, like fatty fish such as wild Alaskan salmon. One of the first study to show that omega-3s can help reduce anxiety was a medical study done in 2011. (The study used omega-3 fatty acid supplements). Prior to the study, only depression was associated with omega-3 fatty acids. A paper study in Psychiatry Research showed that probiotic foods are linked to a decrease in social anxiety. The consumption of foods rich in probiotics such as pickles, sauerkraut and kefir has been associated with less symptoms.

Asparagus, which is considered to be a good herb. Based on study, due to the anti-angrient properties of the Chinese government, asparagus extract was licensed for use as natural functional food and drink ingredient. Organic and almond-rich foods with vitamins B. These "feel good" foods encourage neurotransmitters like Serotonin and Dopamine to be released. It is a quick and easy first step in anxiety management.

Will your anti-anxiety diet contain antioxidants?

Concern is considered to correlate with a reduced total antioxidant condition. It is also important to boost the diet with antioxidant-rich foods that can help to relieve symptoms of anxiety disorder. In the 2010 study, 3,100 foods, spices, herbs, drinks and supplements were examined for antioxidant levels. The antioxidant foods that the USDA describes as high comprise:

- Beans: Pinto, green, red kidney, dried small violet, pine
- Fruits: Bananas, peach, sweet cherries, mango, granny, black prunes (Smith, Red Delicious).
- Beer: Blackberries, strawberries, cannabis, hamstring, blueberries.
- Walnuts: pecans, walnuts.
- Food: artichoke, calf, spinach, beets, broccoli
  Tourum (containing the active ingredient curcumin) and ginger spices are antioxidant and anti-anxiety properties.

Improving mental health through diet

Make sure you speak to your doctor about serious or more than 2 weeks of your anxiety symptoms. But even though your doctor suggests medicine or anxiety therapy, it's always worth asking whether your diet might also be effective. Although nutritional psychiatry is not a substitute for other treatments, food, mood and anxiety are becoming increasingly relevant. More and more evidence is required to grasp fully the role of nutritional psychiatry, or, as I would call it, psychological nutrition.

Reference:
https://www.health.harvard.edu/blog/nutritional-strategies-to-ease-anxiety-201604139441

DRUG PROFILE

ISATUXIMAB-IRFC

Class: CD38-directed cytolytic antibody

Indication:

Used in combination with pomalidomide and dexamethasone, for the treatment of adult patients with multiple myeloma who have received at least two prior therapies including lenalidomide and a proteasome inhibitor drug.

Mechanism of Action:

Isatuximab-irfc is an IgG1-derived monoclonal antibody that binds to CD38 expressed on the surface of hematopoietic and tumor cells, including multiple myeloma cells. Isatuximab-irfc induces apoptosis of tumor cells and activation of immune effector mechanisms including antibody-dependent cell-mediated cytotoxicity (ADCC), antibody-dependent cellular phagocytosis (ADCP), and complement dependent cytotoxicity (CDC). Isatuximab-irfc can activate natural killer (NK) cells in the absence of CD38-positive target tumor cells and suppresses CD38-positive T-regulatory cells.

Dosage form and Administration:

Isatuximab-irfc is available in the form of Injection. Each single dose vial is clear to slightly opalescent, colorless to slightly yellow solution, essentially free of visible particulates available as:

- Injection: 100 mg/5 mL (20 mg/mL) in a single-dose vial
- Injection: 500 mg/25 mL (20 mg/mL) in a single-dose vial

The recommended dose of Isatuximab-irfc is 10 mg/kg actual body weight administered as an intra-venous infusion in combination with pomalidomide and dexamethasone. Each treatment cycle consists of a 28-day period. Treatment is repeated until disease progression or unacceptable toxicity.

Cycle	Dosing schedule
Cycle 1	Days 1,8,15, and 22 (weekly)
Cycle 2 and beyond	Days 1, 15 (every 2 weeks)

The following pre-medications needs to be administered 15-60 minutes prior to Isatuximab-irfc infusion to reduce the risk and severity of infusion-related reactions:

- Dexamethasone 40 mg orally or intravenously (or 20 mg orally or intravenously for patients ≥ 75 years of age).
- Acetaminophen 650 mg to 1000 mg orally (or equivalent).
- H2 antagonists.
- Diphenhydramine 25 mg to 50 mg orally or intravenously (or equivalent).

Preparation and administration of infusion:

- Solution for administration into the patient should be prepared using aseptic techniques. First the dose (mg) required based on actual patient weight (measured prior to each cycle to have the administered dose adjusted accordingly).
- Withdraw the necessary volume of Isatuximab-irfc injection and dilute by adding to the infusion bag of 0.9% Sodium Chloride Injection, USP or 5% Dextrose Injection, USP to achieve the appropriate Isatuximab-irfc concentration for infusion.
- The infusion bag must be made of polyolefins (PO), polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC) with di-(2-ethylhexyl) phthalate (DEHP) or ethyl vinyl acetate (EVA).
- Gently homogenize the diluted solution by inverting the bag. Do not shake.
- Administer the infusion solution by intravenous infusion using an intravenous tubing infusion set (in PE, PVC with or without DEHP, polybutadiene [PBD], or polyurethane [PU]) with a 0.22 micron in-line filter (polyethersulfone [PES], polysulfone, or nylon).
- The infusion solution should be administered for a period of time that will depend on the infusion rate.
- Use prepared Isatuximab-irfc infusion solution within 48 hours when stored refrigerated at 2°C-8°C, followed by 8 hours (including the infusion time) at room temperature.
- Do not administer Isatuximab-irfc infusion solution concomitantly in the same intravenous line with other agents.

	Dilution volume	Initial Rate	Absence of Infusion-Related Reaction	Rate Increment	Maximum Rate
First Infusion	250 ml	25ml/hr	For 30 minutes	25 mL/hour every 30 minutes	150 ml/hr
Second Infusion	250 ml	50ml/hr	For 60 minutes	50 mL/hour for 30 minutes then increase by 100 mL/hour every 30 minutes	150 ml/hr
Subsequent infusions	250 ml	200ml/hr			200 ml/hr

Dosing in Renal & Hepatic Impairment:

Dosage adjustment is not required in patients with hepatic impairment.Dosage adjustment is not required in patients with renal impairment.

Pharmacokinetics:

Following the administration of isatuximab-irfc at the recommended dose and schedule, the steady state isatuximab-irfc mean (CV %) predicted maximum plasma concentration (Cmax) was 351 µg/mL (36.0%) and area under the plasma concentration-time curve (AUC) was 72,600 µg·h/mL (51.7%). The median time to reach steady state of isatuximab-irfc was 8 weeks with a 3.1-fold accumulation. Isatuximab-irfc AUC increases in a greater than dose proportional manner over a dosage range from 1 mg/kg to 20 mg/kg (0.1 to 2 times the approved recommended dosage) every 2 weeks. Isatuximab-irfc AUC increases proportionally over a dosage range from 5 mg/kg to 20 mg/kg (0.5 to 2 times the approved recommended dosage) every week for 4 weeks followed by every 2 weeks. The mean (CV %) predicted total volume of distribution of isatuximab-irfc is of 8.13 L (26.2%). Isatuximab-irfc is expected to be metabolized into small peptides by catabolic pathways. Isatuximab-irfc total clearance decreased with increasing dose and with multiple doses. At steady state, the near elimination (≥99%) of isatuximab-irfc from plasma after the last dose is predicted to occur in approximately 2 months. The elimination of isatuximab-irfc was similar when given as a single agent or as combination therapy.

Adverse Reactions:

The most common adverse reactions in ≥20% of patients were neutropenia, infusion-related reactions (dyspnea, cough, chills, and nausea), pneumonia, upper respiratory tract infection, and diarrhea. The most common hematology laboratory abnormalities (in ≥ 80% of patients) were anemia, neutropenia, lymphopenia, and thrombocytopenia.

Contraindications:

- Pregnancy: No adequate clinical data on exposed pregnancies are available for Isatuximab-irfc. Based on the mechanism of action, Isatuximab-irfc can cause fetal harm when administered to a pregnant woman. Isatuximab-irfc may cause fetal immune cell depletion and decreased bone density. The combination of Isatuximab-irfc with pomalidomide is contraindicated in pregnant women because pomalidomide may cause birth defects and death of the unborn child.
- Patients with severe hypersensitivity to isatuximab-irfc or to any of its excipients.

Precautions:

- Infusion-related reactions have been observed in 39% of patients treated with Isatuximab-irfc. All infusion-related reactions started during the first infusion and resolved on the same day in 98% of the cases. The most common symptoms of an infusion-related reaction included dyspnea, cough, chills, and nausea.
- Isatuximab-irfc may cause neutropenia. Neutropenia (reported as laboratory abnormality) occurred in 96% of patients and grade 3-4 neutropenia occurred in 85% of patients treated with Isatuximab-irfc, pomalidomide, and dexamethasone (Isa-Pd). Febrile neutropenia occurred in 12% of patients and neutropenic infections, defined as infection with concurrent grade ≥3 neutropenia, occurred in 25% of patients treated with Isa-Pd. Conmonly observed infections were upper respiratory tract infections, lower respiratory infections and urinatry tract infections.
- Second primary malignancies were reported in 3.9% of patients in the Isatuximab-irfc, pomalidomide and dexamethasone (Isa-Pd) arm and in 0.7% of patients in the pomalidomide and dexamethasone (Pd) arm, and consisted of skin squamous cell carcinoma, breast angiosarcoma and myelodysplastic syndrome.
- Interference with Serological Testing (Indirect Antiglobulin Test): Isatuximab-irfc binds to CD38 on red blood cells and may result in a false positive indirect antiglobulin test (indirect Coombs test). In multiple myeloma, the indirect antiglobulin test was positive during Isatuximab-irfc treatment in 67.7% of the tested patients. In patients with a positive indirect antiglobulin test, blood transfusions were administered without evidence of hemolysis. ABO/RhD typing was not affected by Isatuximab-irfc treatment.
- Interference with Serum Protein Electrophoresis and Immunofixation Tests: Isatuximab-irfc is an

IgG kappa monoclonal antibody that can be incidentally detected on both serum protein electrophoresis and immunofixation assays used for the clinical monitoring of endogenous M-protein. This interference can impact the accuracy of the determination of complete response in some patients with IgG kappa myeloma protein.

Drug Interactions:

- No drug interactions reported till date. Only laboratory test interferences are reported with Isatuximab-irfc.
- Laboratory Test Interference Interference with Serological Testing: Isatuximab-irfc, an anti-CD38 antibody, may interfere with blood bank serologic tests with false positive reactions in indirect antiglobulin tests (indirect Coombs tests), antibody detection (screening) tests, antibody identification panels, and antihuman globulin crossmatches in patients treated with Isatuximab-irfc.
- Interference with Serum Protein Electrophoresis and Immunofixation Tests: Isatuximab-irfc may be incidentally detected by serum protein electrophoresis and immunofixation assays used for the monitoring of M-protein and may interfere with accurate response classification based on International Myeloma Working Group criteria.

Reference:

- Highlights of Prescribing information, from USFDAWebsite: https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/761113s000lbl.pdf
- Sanofi website: https://www.sanofi.com/en/media-room/press-releases/2020/2020-03-02-19-51-16

EVENT CORNER

Mr. Vishwas H N, and Mr. C Jayakumar, Lecturer, Department of Pharmacy Practice attended the National level Conference, 'IIC Innovation Ambassador Training series' organized by Institution's Innovation Council, MHRDs Innovation Cell, Sri Krishna College of Engineering &Techonolgy, Coimbatore
Date: 6-7January 2020.

Dr. M Deepalakshmi, Lecturer, Department of Pharmacy Practice attended the the National level Conference, 'National seminar on Precision Medicine and Pharmacokinetics in Clinical Practice' organized by SRM College of Pharmacy, SRM Institute of Science and Technology 6-7 February 2020.

Dr. K P Arun, Asst. Professor, Department of Pharmacy Practice attended the National level Conference, '5th International Conference on Clinical Pharmacy' organized by Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences,Manipal, 10January 2020 and 'Scientific writing and Pharmacokinetics Workshop' organized by Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal, 11-12 January 2020.

Dr. Senthil V, Mr. JayakumarC, Mr. Arun R and Mr. Vishwas H N at 'IIC Innovation Amabassador training series' organized by Institution's Innovation Council, MHRDs Innovation Cell, Sri Krishna College of Engineering &Techonolgy, Coimbatore

Dr. Khayati Moudgil, Resident of Department of Pharmacy Practice attended the National level conference, 'Training Programme on Good Clinical Practice' organized by CDSA, Venture Center, Pune, 11-12 February 2020

Dr. Khayati Moudgil, Resident of Department of Pharmacy Practice also attended the International level conference, 'International Conference on Advances in Pharmaceutical and Health Sciences (ICAPHS-2020)' organized by K.S. Hegde Auditorium, Nitte, Deralkatte, Mangaluru. 20-22 February 2020

Dr. K P Arun, Asst. Professor, Department of Pharmacy Practice attended the National level Conference, 'SSX Pumas Workshop' organized by M.S.Ramaiah Memorial Hospital, Mathikere – Bangalore, 20-22 February 2020

Mr. Vishwas H N, Lecturer and Dr. Khayati Moudgil, Resident of Department of Pharmacy Practice attended the National level Conference, 'Two day's workshop on Interdependency Requirements while compiling dossier' organized by JP Winka Pharma consultants & Department of Regulatory affairs, JSS College of Pharmacy, Ooty, 09-10 March 2020

Dr. Khayati Moudgil along with other participants at National level conference, 'Training Programme on Good Clinical Practice' organized by CDSA, Venture Center, Pune

PUBLICATIONS FROM THE DEPARTMENT OF PHARMACY PRACTICE (January, March, 2020)

1. Keerthana Chandrasekar, Diya C, Arun KP. Antibiotics and its altered pharmacokinetics in the pediatric Population An evidence-based review International Journal of Research in Pharmaceutical Sciences, 2020,11(1): 858-864.

2. Norah H Vanlalhriatmawii, Lalaramengmawii, Regil Varghese, Tenzin Tsundue, Khayati Moudgil*. Cerebral palsy with mental retardation: A case report. International Journal of Pharmaceutical Research, 2020, Vol 12(1) : 381-383.

3. Keerthana Chandrasekar, Nakka Gautam Sai, Princy Sabu John, Sruthi Ninan, Raja Durai, Sivasankaran Ponnusankar. Emerging Non-Pharmacological Therapies for Post-stroke Depression and its Future Aspects: A Review. Indian Journal of Pharmaceutical Education and Research, 2020, 54(1): 1-7

4. Deepalakshmi M, Anuvikashini R, Dinesh R, Jerlin Anusha R, Dharini, Arun K P. A rare case of Isoniazid - induced SJ syndrome in a secondary care hospital in rural South India - A Case Report. Research Journal of Pharmacy and Technology 2020; 13(2):758-760.

5. Keerthana Chandrasekar, Diya C, Vignesh Kumar K. A Case Report on Diabetic Ketoacidosis in Children. Journal of Global Pharma Technology, 2020, 12(1):11-15.

6. Lisa Mathew Adackapara, Keerthana Chandrasekar. Amikacin Induced Ototoxicity in an 8 Year Old Patient with UTI: A Case Report. Journal of Global Pharma Technology, 2020, 12(2):7-9

7. Lalduhawmi TC, Diya C, Keerthana Arjunan, JerlinAnusha R, Keerthana Chandrasekar. Common upper respiratory tract infection leading to uncommon retropharyngeal abscess-A case series on paediatrics. International Journal of Research in Pharmaceutical Sciences, 2020:11(1), 836-839

For clarifications/ feedback, write to:
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