

FEATURES OF THE RULES FOR INSULIN INJECTION TECHNIQUES IN ELDERLY AND SENILE PATIENTS WITH DIABETES MELLITUS

Negmatova Gulzoda Shukhratovna

Scientific adviser: PhD.

Head of the Department of Endocrinology, Samarkand State Medical University

Xakimova Gulira'no Dilshodbek qizi

Clinical Resident of the Department of Endocrinology, Samarkand State Medical University

Abdiyev Lazizbek Sobir o'g'li

Clinical Resident of the Department of Endocrinology, Samarkand State Medical University

Daminov Abdurasul Takhirovich

Assistant of the Department of Endocrinology, Samarkand State Medical University

Relevance

Currently, one of the pressing problems of humanity is diabetes mellitus (DM). The number of patients with diabetes in the world doubles every 10-15 years. The development of diabetes and its complications leads to disability of patients and a deterioration in the quality of life. However, every year, thanks to the efforts of scientists, new drugs and methods of treating this disease, based on modern scientific achievements, appear. Today, there are enough publications reflecting modern aspects of the diagnosis and treatment of type 1 diabetes. One of the most accessible and timely documents is "Algorithms for specialized medical care for patients with diabetes," edited by I.I. Dedova, M.V. Shestakova from 2013¹. This guideline is regularly updated in accordance with new data and recommendations for the treatment of patients with diabetes, based on international and domestic experience in providing care to these patients, including recommendations from WHO (2011), International Diabetes Federation (IDF, 2011), American Diabetes Association (ADA, 2013), American Association of Clinical Endocrinologists (AACE, 2009), International Society for Childhood and Adolescent Diabetes (ISPAD, 2009), Russian Association of Endocrinologists (RAE, 2011, 2012), as well as on the results of completed international ones (ADVANCE, ACCORD, VADT, UKPDS, etc.) and randomized

clinical trials in patients with diabetes.[6] Based on the duration of action, modern insulin analogues are divided into ultra-short and long-acting, as well as combined preparations of analogues. The first include: Humalog (lispro), Novorapid (aspart) and Apidra (glulisine). Long-acting ones include Lantus (glargine) and Levemir (detemir) [9], combined ones (HumalogMix 25, NovoMix 30) [11]. The clinical use of ultra-short insulins began in 1996. The first analog insulin is Humalog. In its structure, the amino acids in the B-chain are located as follows: lysine is localized in the 28th position, and the amino acid proline is located in the 29th position. A few years after the start of the use of insulin Humalog, a new original analogue of insulin was developed, in which in the 28th position of the B-chain the amino acid proline was replaced by a negatively charged aspartic amino acid - Novorapid insulin [3, 10, 13]. One of the latest to be introduced into clinical practice is ultra-short analog insulin Apidra (manufactured by SonofiAventis), produced using recombinant technology and is a polypeptide. Unlike endogenous and genetically engineered human insulin, in the Apidra insulin molecule, asparagine at position B3 is replaced by lysine, and lysine at position B29 is replaced by glutamic acid [4, 17]. It differs from other ultra-short-acting insulin analogues in the absence of zinc as a stabilizer that can reduce the rate of action of the drug. This makes it possible to better simulate the physiological secretion of insulin after a meal and more effectively control postprandial glycemia [8]. Apidra is administered immediately before (0-15 minutes) or immediately after meals, which is important not only for children, adolescents and people leading an active lifestyle, but also for all patients with diabetes. Apidra has a rapid onset of action (5-15 minutes after injection). Peak concentration is reached 1-2 hours after injection, duration of action is 3-4 hours [4]. However, long-acting drugs that can maintain a stable basal concentration of insulin in the blood help to completely imitate the physiological secretion of insulin throughout the day. Insulin Levemir is a long-acting analogue of human insulin. Its molecular structure differs from the structure of human insulin in the absence of threonine at position B30 and the addition of myristic acid, a fatty acid residue of 14 carbon atoms (C14), to lysine at position B29 [5,16].

Target: studying the importance of the rules of insulin injections in patients with type 2 diabetes mellitus (DM-2) of elderly and senile age when monitoring patients who attended the “School for Diabetes Patients” at the Samarkand Endocrinology Center (age from 61 to 85 years).

MATERIAL, RESULTS AND DISCUSSION

According international experts, if insulin injection rules are not followed, lipohypertrophy is formed, which increases the HbA1c level by 0.55%, the insulin dose by 10.1 units/day, the severity of glycemic variability and the frequency of hypoglycemia. The formation of lipohypertrophy is associated with the lack of

changing injection sites and changing needles (with the use of a needle 6 times, the frequency of lipohypertrophy reaches 85%). During the initial examination and questioning of our patients with diabetes, it was revealed: 70% of patients do not change injection sites, as a result of which they have pronounced lipohypertrophy in the periumbilical region and on the shoulder; only 1–2% use a needle once, and more than 20% use one needle with one cartridge (this is more than 15 times). The variability of glycemia and the frequency of hypoglycemia significantly depend on the error when injecting insulin with insulin entering intramuscularly: the needle must be long enough to penetrate the skin (thickness from 1.5 to 2.5 mm) to the subcutaneous fat; but short enough so as not to affect the muscle. The frequency of intramuscular insulin hits when injected with a needle 8 mm long increases 14 times compared to a needle 4–5 mm long. During the initial survey of our patients, almost 50% use needles longer than 8 mm and only 18.9% use needles 4–5 mm long. 2 months after school training, positive dynamics were noted: 37.2% of patients used needles 4–5 mm long, 53.1% used needles 6–8 mm long, and only 9.7% used needles longer than 8 mm. Example: patient M., 83 years old; complaints of fluctuations in glycemia during the day from 4.2 to 15 mmol/l.; Type 2 diabetes – 35 years; insulin therapy since 1997, total insulin dose - 82 units/day: ICD 36 units (p/z, p/o and p/u) and Lantus 36 units. at 22.00; injection technique – needle length 8 mm, number of injections per needle more than 10, does not form a fold, both insulins are injected into the peri-umbilical region, where areas of lipohypertrophy have already formed. 2 months after training the patient at school: uses needles 4 mm long, changing the needle and rotating the injection sites before each injection (does not inject into areas of lipohypertrophy). As a result: hypoglycemia disappeared, glycemic variability from 6.4 mmol/l to 8.4 mmol/l; the total insulin dose was reduced by 2 times to 38 units/day: the HBA1c level decreased by 0.5%.

CONCLUSIONS

It is very important to pay attention to the technique of insulin injections during an individual conversation with the patient and his examination, and to dwell in detail on errors when administering insulin when conducting classes at the “School for Patients with Diabetes.”

REFERENCES:

1. Salimova DE, Daminov AT. A CLINICAL CASE BASED ON THE EXPERIENCE OF TREATING HYPERTENSION IN A PATIENT WITH TYPE 2 DIABETES MELLITUS, OBESITY AND VITAMIN D DEFICIENCY. *Educ Res Univers Sci.* 2023;2(12):150-154.

2. Sh, N. G., Salimova, D. E., Oybekovna, X. S., Qamariddinova, X. A., & Amin o'g'li, B. J. (2022). ENDOCRINE GLANDS, STRUCTURE, AGE FEATURES, FUNCTIONS. PEDAGOG, 5(5), 341-345.
3. Shukhratovna, N. G., & Erkinovna, S. D. (2023). Features of the Course of Type 2 Diabetes Mellitus in Combination with Arterial Hypertension and Ways to Correct Them. Eurasian Medical Research Periodical, 17, 39-41.
4. Shukhratovna, N. G., & Erkinovna, S. D. (2022). THE ROLE OF GASTROINTESTINAL HORMONES IN THE PATHOLOGY OF THE DIGESTIVE SYSTEM. PEDAGOG, 5(6), 408-412.
5. Негматова, Г. Ш., & Салимова, Д. Э. (2023). Особенности течения сахарного диабета 2 типа в сочетании с артериальной гипертензией и пути их коррекции. Ta'lim fidoyilari, 2(1), 82-86.
6. Sobirjonovna K. N. Factors determining the clinical significance of depeptidyl peptidase 4 inhibitors in the treatment of patients with type 2 diabetes mellitus //World Bulletin of Public Health. 2022. Т. 8. – С. 67-72.
7. Курбонова Н.С. Негматова Г.Ш. "Ортикча вазнли қизларда хайз даврининг бузулиши"// Тиббиётда янги кун. 9(47) 287-291 бет. 2022
8. Курбонова Н.С. Негматова Г.Ш. "Эриктильная дисфункция у больных сахарным диабетом и ее клинический анализ"//Биомедицина ва амалиёт 5.1 сон. 160-165 бет. 2022 йил.
9. Курбонова Н.С. "Clinical manifestations and classification of lesions of the macular area in diabetes." Eurasian scientific herald. Vol13/2022/ 97-101стр.
10. Курбанова Нозима Сабиржановна "FACTORS DETERMINING THE CLINICAL SIGNIFICANCE OF DEPIPTIDYL PEPTIDASE 4 INHIBITORS IN THE TREATMENT OF PATIENTS WITH TYPE 2 DIABETES MELLITUS" World Bulletin of Public Health (WBPH)Volume-8, March 2022 67-72
11. Nazira K., Siddikovna T.G., Davranovna D.A., Takhirovich D.A., Tulkinovich O.S. (2021). Cardiovascular complications in patients with covid and diabetes mellitus 2. Central Asian Medical and Natural Science Journal, 2(3), 37-41.
12. GROWTH HORMONE FOR THE TREATMENT OF HEREDITARY DISEASES IN CHILDREN Ortikov Shahzod Tulkinovich. Karimova Nazira Alimovna, Kurbanova Nozima Sobirjanovna, Daminov Abdurasul Takhirovich / International Journal of Innovative Engineering and Management Research. 2021 281-284.
13. Features of the course of type 2 diabetes mellitus with arterial hypertension and ways of their correction Negmatova Gulzoda Shukhratovna, Salimova Dildora Erkinovna Eurasian Medical Research Journal 17, 39-41, 2023.

14. FEATURES OF THE TECHNIQUE OF TYPE 2 DIABETES MELLITUS IN COMBINATION WITH ARTERIAL HYPERTENSION AND WAYS OF CORRECTION IX G.Sh. Negmatova, D.E. Salimova LLC "Research and publications", Enlightener, 2023.
15. Features of the coexistence of type 2 diabetes mellitus with arterial hypertension and their treatment Gulzoda Shukhratovna Negmatova, Dildora Erkinovna Salimova LLC "Ochik fan", Science and education, 2023.
16. Khalimova Z.Yu. and G.Sh. Negmatova. Autoimmune polyglandular syndromes. Literature review". Central Asian Journal of Medical and Natural S
17. Даминов А., Хайдаров О., Хасанова М. и Абдукахорова Р. (2023). ОСЛОЖНЕНИЯ ГЛЮКОКОРТИКОИДНОЙ ТЕРАПИИ У ПАЦИЕНТОВ С ДИАБЕТОМ, ПЕРЕЖИВШИХ КОВИД-19. Евразийский журнал медицинских и медицинских наук , 3 (4), 197-200.ciences 2.4 (2021): 166-175.
18. Khamidova M.N., Ismatova I.F., Zh.Sh. Berdirov, G.Sh. Negmatova and A.T. Daminov. "DIABETES AND COVID-19". Eurasian Journal of Medicine and Natural Sciences 2, no. 13 (2022): 190-204.
19. Takhirovič D.A., Burchaklar S.J.A., Shukhratovna N.G., Shukhratovna S.G., Zainuddinovna M.G. (2022). COURSE OF COVID-19 IN PATIENTS WITH DIABETES. Web of Scientist: International Journal of Scientific Research, 3(02), 73–76.
20. Takhirovič D.A., Korners S.J.A., Shukhratovna N.G., Shukhratovna S.G., Zainuddinovna M.G. (2022). COURSE OF COVID-19 IN PATIENTS WITH DIABETES. Web of Scientist: International Journal of Scientific Research, 3(02), 73–76.
21. Abduvali, X., Otabek, S., Asilbek, E., & Daminov, A. T. (2023). TYPE 2 DIABETES: TIME TO CHANGE THE CONCEPT. Science and innovation, 2(D4), 165-167.
22. Togaeva G.S. «Ўз-узини назорат қилиш мактабида ўқиган қандли диабет 2 тип билан касалланган беморларнинг клиник ва биохимиявий курсаткичлари». Journal of Biomedicine and Practice 2 Special Issue. Tashkent in 2020. Pages 132-135.
23. Togaeva Gulnora Siddikovna., Oripov Firdavs Suratovich., Davranova Aziza Davranovna.: "Structural features of cells of the islets of Langerhans in offspring with alloxonic diabetes" (Review article). Annals of the Romanian Society for Cell Biology 2021; P.158-162
24. Negmatova G.Sh, Togayeva G.S., Davranova A.D., Azimbegova S.N. "Assessment of the effectiveness of cardioprotective drugs in treatment of children with diabetic cardiomyopathy"/ The American journal of medical sciences and pharmaceutical research//4.01. 79-83.

25. Negmatova G.Sh., Togayeva G.S., Davranova A.D., Azimbegova S.N. Uzbek medical journal. // Criteria for physical and sexual development in with thyroid diseases. 4. 32.
26. Negmatova G.Sh, Togayeva G.S., Davranova A.D., Azimbegova S.N. "Assessment of the effectiveness of cardioprotective drugs in treatment of children with diabetic cardiomyopathy"/ The American journal of medical sciences and pharmaceutical research//4.01. 79-83.
27. Dzhuraeva Z.A. Negmatova G.Sh. The state of the cardiovascular system in patients with hypothyroidism. Use of highly innovative technologies in preventive medicine. Republican scientific-practical conference. Andijon 2020.
28. Z.Y Xalimova G.Sh. Negmatova - "Аутоиммунные Полигландулярные Синдромы. Обзор Литературы". Central Asian Journal of Medical and Natural Science, 2021
29. Endocrinology: national guidelines. Ed. Dedova I.I., Melnichenko G.A. M.: GEOTAR-Media; 2016.
29. Aramovna D. Z., Azamatovna H. D. Features of the Pathology of the Reproductive System in Pubertal Patients with Hypothalamic-Pituitary Dysfunction //EUROPEAN JOURNAL OF BUSINESS STARTUPS AND OPEN SOCIETY. – 2023. – Т. 3. – №. 2. – С. 74-77.
30. Qodirov, E. A., Ismoilov, S. I., Valiyev, J. J., & Daminov, A. T. (2023). Qandli diabet bilan ogʻrigan bemorlarda COVID-19 xavfining ortishi patofiziologiya, davolash va oldini olishdagi dolzarb muammolar. Science and Education, 4(3), 91-101.
31. Daminov, A., Khaydarov, O., Hasanova, M., & Abdukakhorova, R. (2023). COMPLICATIONS OF GLUCOCORTICOID THERAPY IN PATIENTS DIABETES SURVIVED COVID-19. Евразийский журнал медицинских и естественных наук, 3(4), 197-200.
32. Урунова, Ф. З., Амирова, Ш. А., Базарова, В. Р., Бахронова, М. Б., & Даминов, А. Т. (2023). Осложнения глюкокортикоидной терапии при COVID-19 на фоне сахарного диабета 2-типа. Science and Education, 4(2), 520-529.