

# Современные проблемы инсулинотерапии

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**П**о данным ВОЗ, в настоящее время сахарным диабетом (СД) страдают около 120 млн. человек, в 2025 г. их число превысит 250 млн. [1]. Примерно 10% из общего числа больных СД страдают диабетом 1 типа [3]. Диабет 2 типа, как известно, связан с нарушением реакции тканей на инсулин. При диабете 2 типа 30–40% больных становятся инсулинозависимыми, т.е. используют инъекции инсулина или комбинацию его с пероральными сахароснижающими препаратами. В России в 1997 г. зарегистрировано примерно 2100 тыс. больных диабетом, из них 252 410 диабетом 1 типа, 14367 детей и 6494 подростка. Эти данные основаны на частоте обращаемости, фактически эти данные могут превышать зарегистрированные в 3–4 раза.

Препараты инсулина различаются по источнику получения (степени очистки, веществам, добавляемым к раствору инсулина (удлиняющим действие инсулина, бактериостатикам, адъювантам), концентрации, величине pH, особенностям химического состава (веществам, влияющим на возможность смешивания инсулинов короткого действия с инсулином пролонгированного действия).

Современные препараты инсулина разделяют на группы в зависимости от происхождения (*животные и человеческие*) и длительности действия. Инсулины от животных - *свиные, говяжьи и смешанные (свиной+говяжий)*. На протяжении 60 лет для лечения СД применяли говяжий и свиной инсулины, которые по составу отличаются от человеческого (на 3 и 1 аминокислоту соответственно). Иммуногенность инсулинов следующая: бычий>свиные>человеческие.

Человеческие инсулины (ЧИ) являются наименее иммуногенными и наиболее эффективными [5]. Терапия инсулином животного происхождения вызывает образование высоких титров антител (IgG) и часто приводит к развитию иммунологической формы инсулинрезистентности и липодистрофическим изменениям подкожно-жировой клетчатки [6]. Применение ЧИ позволило исключить все осложнения, наблюдавшиеся при терапии инсулинами животного происхождения. У пациентов, переводившихся с терапии монокомпонентными свиными инсулинами на полусинтетические человеческие, также было отмечено прогрессирующее снижение уровня IgE. Смена

смешанного бычьего-свиного инсулина на ЧИ вызвала исчезновение анафилактической реакции, наблюдавшейся у пациента [7–9]; терапия ЧИ не вызвала никаких системных или местных аллергических реакций. Уровень IgE у пациентов, получающих ЧИ, был значительно ниже по сравнению с больными, находившимися на терапии монокомпонентными препаратами инсулина [10]. По данным Fallois и др. [11], связывание специфических IgE у пациентов с аллергическими реакциями на инсулинотерапию было наиболее выражено при использовании бычьих инсулинов и наименьшим - при применении ЧИ. По данным Wippl и др. [12], аллергические реакции на инсулины у 8 пациентов с ИНСД, получавших временную терапию препаратами свиного и смешанного монокомпонентного инсулина, исчезли после перевода на ЧИ в 5 случаях и значительно снизились у 3 больных. Таким образом, ЧИ являются препаратами выбора при инсулинотерапии у больных с аллергическими реакциями. Аллергические реакции на ЧИ встречаются менее чем у 1% больных [13]. Недостатки бычьего инсулина в иммунологическом плане столь очевидны, что в настоящее время эти препараты запрещается использовать для лечения больных СД; аналогичные рекомендации касаются и смешанных инсулинов [14].

Потребность в инсулине у больных СД 1 типа, получающих ЧИ, довольно стабильна, в то время как доза свиного монокомпонентного инсулина за тот же период применения увеличивается примерно вдвое [31]. Терапия свиным инсулином нарушает соотношение Т-хелперов и Т-супрессоров. При доказанном снижении иммуорегуляторного индекса при терапии свиным инсулином перевод на ЧИ нормализует иммунный ответ [31].

В патогенезе осложнений СД иммунные нарушения играют ведущую роль. ЧИ является и наиболее эффективным средством профилактики поздних сосудистых осложнений [31].

Эффективность ЧИ отражает рост производства и его продажи в мировом масштабе. Данные Информационной медицинской статистики (IMS) показывают, что главный путь развития современного инсулинового рынка - это рост продаж ЧИ и увеличение продаж смешанных форм ЧИ (см. таблицу) [15].

# Sovremennyye Problemy Otorinolaringologii I Logopatologii

**Yijin Wang**



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