ANTIVIRAL THERAPIES IN THE MANAGEMENT OF HEPATITIS C

Alfraganus Universiteti davolash ishi

3-kurs talabasi

Raxmatullayeva Zebiniso

Annotation; Hepatitis C virus (HCV) infection is one of the major global health concerns, affecting millions of people worldwide. The development of direct-acting antivirals (DAAs) has significantly improved treatment outcomes, with sustained virological response rates exceeding 95%. This article provides an overview of the mechanisms of action of antiviral drugs, their clinical efficacy, therapeutic regimens, side effects, and prospects for future therapy. Both interferon-based and interferon-free strategies are discussed, emphasizing the role of DAAs in modern medicine.

Keywords: Hepatitis C, antiviral therapy, direct-acting antivirals, interferon-free

Introduction Hepatitis C virus (HCV) is a hepatotropic RNA virus that causes chronic liver disease, cirrhosis, and hepatocellular carcinoma. According to the World Health Organization, over 58 million people are chronically infected with HCV. The main route of transmission is parenteral, with intravenous drug use and unsafe medical procedures being the most common sources of infection. For decades, the standard therapy for HCV infection included pegylated interferon and ribavirin. However, the low efficacy (40–60%), severe side effects, and long treatment duration made these regimens suboptimal. The introduction of direct-acting antivirals (DAAs) revolutionized treatment, achieving cure rates of more than 95%. Interferon-based therapies: Pegylated interferon stimulates the immune response against HCV. Ribavirin, a nucleoside analog, enhances interferon efficacy. Limitations: flu-like symptoms, depression, anemia, and treatment failure in many patients. Target specific proteins involved in HCV replication. Main classes: NS3/4A protease inhibitors (e.g., simeprevir, grazoprevir). NS5A

inhibitors (e.g., ledipasvir, velpatasvir, daclatasvir). NS5B polymerase inhibitors (e.g., sofosbuvir, dasabuvir). Advantages: high efficacy, short duration (8–12 weeks), oral administration, minimal side effects. Cure rates ranged from 40–60%, with significant toxicity. DAA era: Sustained virological response (SVR) rates above 95% in all genotypes. Special populations: DAAs are effective in patients with cirrhosis, HIV co-infection, renal disease, and even post-liver transplantation. Pan-genotypic combination with high cure rates. Effective against genotype 1, commonly used worldwide. Highly effective for all HCV genotypes, even in patients with renal impairment. Treatment duration: 8–12 weeks for most patients; may extend to 24 weeks in complicated cases. Mild symptoms: headache, fatigue, and nausea. Limitations: high cost, limited availability in low-income countries, risk of drug–drug interactions. Future Directions Development of HCV vaccines. Universal access to DAAs through generic production. Personalized treatment strategies based on host genetics and viral characteristics. Conclusion The management of Hepatitis C has evolved remarkably from interferon-based regimens to highly effective direct-acting antivirals. DAAs provide cure rates above 95% with fewer side effects, making HCV elimination a realistic goal. However, challenges such as high costs, limited access, and the need for global prevention strategies remain. Expanding access to antiviral therapy and developing effective vaccines are crucial for achieving global eradication of HCV.