

PHARMAMEDICAL TREND ANALYSIS (PMTA)



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Rheumatoid Arthritis: Its Association with Coronary Artery Disease and Stroke Risk

We are well-known about the chronic rheumatoid arthritis (RA) disease, most commonly observed in middle to older aged people. This disease discomforts the human life leading to disability and painful living. Once people get rheumatoid arthritis, they have to take medication for life-long to relieve the pain and discomfort. Although advancement in medical treatment system and new drug discovery have improved the clinical treatment options and relieved the pain of the patients, severe rheumatoid arthritis can still cause physical disabilities (Arthritis foundation, 2021). More women than men are affected by rheumatoid arthritis.

Association of rheumatoid arthritis with coronary disease and stroke risk

Cardiovascular disease (CVD) is one of the most common diseases that causes the death of significant number of people worldwide. People with rheumatoid arthritis have more probability of having cardiovascular disease and diabetes with the rate of 1.5 times higher than the general population. The low mobility, movement and exercise are presumed to be one of the main factors for high prevalence of cardiovascular disease and diabetes mellitus. There are some more probable factors, such as shared risk factors (e.g., obesity and smoking), and side effects of antirheumatic therapies. However, the traditional risk factors do not fully support the reasons of increased rate of cardiovascular disease risk in rheumatoid arthritis. Therefore, medical research presumed that rheumatoid arthritis may be a novel and independent risk factor for coronary disease. The studies reported that cardiovascular disease and rheumatoid arthritis have overlapping pathophysiologic mechanisms which may contribute, such as systemic inflammation, with cytokines raised in rheumatoid arthritis may cause atherosclerotic diseases and cardiovascular risk in rheumatoid arthritis (Yuan et al., 2022). But there were some confusions or limitations to fully support this finding or hypothesis.

Therefore, Yuan et al. (2022) conducted a mendelian randomization analysis by using genetic variants. They concluded that genetic liability to rheumatoid arthritis was associated with elevated risk of cardiovascular disease and *Intracerebral hemorrhage (ICH)*, but not ischemic stroke or subarachnoid hemorrhage, because genetic liability to rheumatoid arthritis was associated with elevated levels of tumor necrosis factor [TNF], and C-reactive protein [CRP], which appeared to mediate the association with cardiovascular disease. Thus, they provided important genetic evidence supporting the link between rheumatoid arthritis and some cardiovascular diseases and underscored the role of inflammation in driving cardiovascular disease specifically.

References

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Progression and therapy of inflammatory bowel disease

The inflammatory bowel diseases (IBDs) are progressive, debilitating, and life-limiting diseases of the gastrointestinal tract, which affect people all over the world. IBDs include Crohn's disease and Ulcerative colitis. People of any age group can be affected by these diseases and can suffer from chronic symptoms, which affect both the gastrointestinal tract and extraintestinal manifestations (Hart and Rubin, 2022). The long-term disease course, progression of disease and outcomes of these diseases can't be clearly predicted, thereby imposing heavy pressure, impact and uncertainty on clinical treatment, therapy and quality of life. It is difficult to predict which therapy will produce the best response for an individual patient and whether the disease will turn into further complications, such as colorectal cancer (Hart and Rubin, 2022).

Monitoring and assessment of inflammatory bowel disease

Without timely and effective treatment, inflammatory bowel diseases can result in irreversible long-term complications due to progressive nature of Crohn's disease (CD) and Ulcerative colitis (UC).

Inclusion of pain, fatigue, and emotional wellness into treatment goals

The best practices for the management of inflammatory bowel disease are early diagnosis and the optimal control of inflammation with a continuous cycle of assessment, treatment, monitoring, and adjustment of therapy (Keefer et al., 2022).

Prevention to modify inflammatory bowel disease

There are improved therapeutic strategies and therapeutic targets for management of inflammatory bowel disease, however, it is still now a disabling disease with potential to progress and lead to irreversible complications (Torres et al., 2022). There are a lot of evidence that support the concept of a preclinical phase in inflammatory bowel disease, during which immune and inflammatory pathways are already altered. The preclinical phase which precedes the clinical diagnosis is more significant for prevention and management of inflammatory bowel disease. Targeting the early pathogenic events that promote the development of inflammatory bowel disease could prevent or attenuate disease onset and offer a true opportunity for disease modification.

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Caring of mental health for older people

Mental disorders in older people

The number of older/aged people are gradually increasing, especially in the developed and middle-income countries due to their low birth rates. Poor mental health and mental disorders in older adults are causing suffering and disability for them all over the world. The four types of disorders cause disability in the older people: neurocognitive disorders, major depression, schizophrenia, and substance use disorders (Reynolds 3rd et al., 2022). The mental disturbances isolate them from social functioning and reduce economic productivity and adherence to co-prescribed medical treatments. They have multimorbidities. Therefore, the mental health care of the older people and their family caregivers is labor-intensive. Thus, the older people are losing their independence and suffering from early mortality from suicide and physical illness. Prevention, timely recognition and treatment are global public health and moral priorities in order to protect these older people (Reynolds 3rd et al., 2022).

Reference

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Ischemic stroke and neurovascular unit: How do they associate?

Dr Md Anawar Hossain

Ischemic stroke and its effect

Stroke is the second leading factor for people's death worldwide. It also causes the disability of people. Ischemic stroke (IS) is a common cerebrovascular disease which accounts for 85% of strokes (Wang et al., 2021). A sudden blockage of a blood vessel in the brain restricts blood supply to the brain cell, causes the death of brain cells and makes a significantly negative impact on human health and society. The large scale neuroprotective clinical trials were conducted for the last few decades, but most of them failed. Therefore, the focus of stroke treatment shifted from a neuroprotective approach to neurovascular protection.

Treatment options and new development

The concept of the neurovascular unit (NVU) consists of neurons, astrocytes, smooth muscle cells (SMCs), endothelial cells (ECs), pericytes (PCs), and the basal lamina matrix (Wang et al., 2021). It plays a significant role in ischemic stroke progression. Effective reperfusion strategies are implemented to restore the blood flow in the target organ or tissue after stroke or heart attack. The intravenous thrombolysis and thrombectomy are the most common treatment options for ischemic stroke patients. Currently, the tissue-type plasminogen activator (tPA) is a widely accepted treatment, that is the most effective when administered within 4.5 h after acute ischemic stroke (AIS). However, tissue-type plasminogen activator treatment is administered to a

limited number of patients due to its time restriction. Therefore, there is an urgent need to develop other effective treatments.

Impact of neurovascular unit on ischemic stroke treatment

The current treatment methods use the recanalization of occluded blood vessels, which are insufficient or inaccessible to many stroke patients. Recently, we can more clearly understand about the profound influence of the neurovascular unit on recanalization and the prognosis of ischemic stroke. Deeper studies of the neurovascular unit have also provided novel approaches for ischemic stroke treatment (Wang et al., 2021). Wang et al. (2021) reported that both the pathophysiological and neurovascular repair processes of ischemic stroke are strongly associated with the homeostatic state of the neurovascular unit. Therefore, further research into therapies focusing on the neurovascular unit could develop more treatment options for ischemic stroke. Wang et al. (2021) made a thorough review and provided some conclusions for the effects of neurovascular unit on the current and future development of therapies for ischemic stroke as below:

- Definitely, the neurovascular unit has a significant leading role in the pathophysiological process of ischemic stroke.
- Neurovascular unit may have great effects on the blood-brain barrier (BBB), cell preservation, inflammatory immune response, and neurovascular repair.
- Both cell-based and pharmacological treatments targeting the neurovascular unit can act or fight against detrimental effects or injuries after an ischemic stroke.
- The idea of ischemic stroke treatment has shifted from the neuronal era to the neurovascular era.
- The entire framework of the neurovascular unit must be considered to conduct thorough investigations on the multiple interactions between its cells to further explore the therapeutic potential of the neurovascular unit in clinical settings.

Reference

Wang L., Xiong X., Zhang L., Shen J., 2021. Neurovascular Unit: A critical role in ischemic stroke. *CNS Neuroscience & Therapeutics*, Vol. 27, pp. 7–16.

Significance of Quality Control and Quality Assurance in Pharmaceutical Production

Dr Md Anawar Hossain

What is quality control (QC)?

The main job of quality control is to test, analyse and verify the medicine at different stages of production in the pharmaceutical industry, and make sure that every product maintains the highest quality. Quality control also checks any defects in products and solve these problems using corrective process. Furthermore, quality control process inspects and approves products when they fulfil the required customer and regulatory standards. Quality control is a key step in quality management of pharmaceutical products and workplace (Kniebe, 2022).

What is quality assurance (QA)?

Quality assurance is a process which ensures meeting the quality requirements of the products. Quality assurance defines processes, establishes standards and develops guidelines for better quality management, which act to prevent mistakes and defects, as well as manage quality (Kniebe, 2022).

Difference between quality control and quality assurance

The quality control and quality assurance have some differences between them, which mainly focus on their purpose and objectives. Quality assurance works on the process, while quality control ensures the product's quality. But both of these processes are essential for the production and release of different medical products.

Significance of quality control and quality assurance

Sometimes, people do mistake using these terms in pharmaceutical production. Although quality control and quality assurance define the different aspects of quality management, but both of them work hard to fulfil the high expectations and demands of customers (Kniebe, 2022). Both quality control and quality assurance endeavour to ensure that the products have been manufactured following the correct process and products are safe to use, as well as having their expected effect.

Reference

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Labeling and packaging in pharmaceutical industry

Dr Md Anawar Hossain

Significance of product labelling and packaging

Appropriate labelling of products is essential for the safety of the products and customers and reputation of the company. High quality label is used not only for the nice looking of the products on the shelf, but it is required to keep consumers safe and healthy. Pharmaceutical manufacturers and distributors can incur high risk such as financial penalty or cancellation/suspension of their license provided that they do not follow the best practices and industry regulations for packaging and labeling (Luminer, 2022). Pharmaceutical companies and distributors may face the following high risks and dangers if they do not follow drug authority regulations for product labelling and packaging:

- Risk to patients/consumer safety.
- Risk of non-compliance costs.
- Risk of damage of company reputation.

Conclusion

Every business must ensure that their product's labelling protects both customers *and* their company from harm.

Reference

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