CMNV: the emerging virus forcing a rethink of aquaculture, public health, and global trade

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A pathogen that crosses boundaries

The Covert Mortality Nodavirus (CMNV) is no longer a technical term confined to aquatic pathology labs. In just a few years, it has evolved from a silent shrimp pathogen into a topic of growing sanitary and commercial concern, with implications for production systems, food safety, and human health. Its recent association with an ocular disease in people exposed to raw seafood makes it a striking example of the challenges posed by an interconnected world.

A virus that originated in aquaculture but did not stay there

CMNV was first identified in Litopenaeus vannamei farms, where it caused covert mortality: animals that appeared healthy until shortly before dying. Over time, it was found to circulate in fish, mollusks, rotifers, and other invertebrates, revealing remarkable ecological plasticity and widespread presence in marine and estuarine environments.

From a production standpoint, its impact is substantial: economic losses, outbreaks triggered by environmental stress, and transmission routes that include horizontal and possibly vertical spread. For the industry, this means treating CMNV as a persistent environmental pathogen, capable of entering culture systems through postlarvae, untreated water, or biological vectors.

The health dimension: when an aquatic virus reaches the human eye

The most unexpected development came from medicine. Recent studies identified CMNV in patients with persistent hypertensive viral anterior uveitis, an ocular inflammation that can raise intraocular pressure and threaten vision. Most cases shared a common pattern: frequent handling of raw seafood or consumption of uncooked marine products.

Although research is ongoing, the evidence is strong enough to classify CMNV as an emerging zoonotic risk, particularly relevant for aquaculture workers, processing plants, and food service. This underscores the need to reinforce public health messages on hand hygiene, eye protection, and proper cooking.

A new factor in the international seafood trade

In a global market where risk perception can shift trade flows within days, CMNV introduces a new layer of uncertainty. Although no specific sanitary standards exist yet, past experience shows that importing countries react quickly to emerging pathogens linked to raw products.

This may translate into:

- Additional border inspections.

- Stricter sanitary certification requirements.

- Non-tariff barriers driven by precaution.

For exporting countries, the potential impact is considerable: from shipment rejections to loss of access to premium markets. Yet this also creates an opportunity: those who document surveillance, biosecurity, and transparent communication can position themselves as **trusted suppliers**.

The necessary response: prevention, evidence, and responsibility

CMNV forces the integration of three spheres that historically operated separately: aquaculture, public health, and international trade**. Prevention must encompass the entire chain.

Priority measures:

Sanitary surveillance in farms and processing plants.

Occupational biosecurity with eye protection and gloves.

Food safety practices and separation of raw/cooked zones.

Clear consumer communication on risks associated with raw products.

Commercial transparency in hazard analyses and reporting.

This approach reduces vulnerabilities and strengthens trust in markets increasingly sensitive to emerging risks.

A test case for the One Health approach

CMNV is more than an aquatic virus: it is a reminder that production systems, ecosystems, and human health are deeply interconnected. Its emergence in sanitary and commercial agendas shows that prevention is not only a technical obligation but an institutional responsibility that shapes competitiveness and sustainability.

In a world where pathogens travel as fast as goods, anticipating risks and acting rigorously can make the difference between vulnerability and leadership.