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Awareness of interferon therapy among dental students

Nithyanandham Masilamani, Dhanraj Ganapathy*

Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

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ABSTRACT

Interferon is perhaps the term given to antiviral material formed by many vertebrate cells in reaction to viral infections. Research has established a number of mechanisms involved, in therapeutic benefits of interferon together with antiviral, innate immunity-enhancing and cytostatic functions. This survey was performed for assessing the awareness about interferon therapy amongst dental students. A cross-sectional survey was performed with a self-administered questionnaire with ten queries circulated among 100 dental students. The questionnaire assessed the awareness about Interferon therapy, their medicinal uses, anticancer activity, mechanism of action and side effects. The responses were recorded and analysed. 91% of the respondents were not aware of medical uses of Interferon therapy. 93% were not aware of anticancer activity of Interferon therapy. 93 % were not aware of the mechanism of action of Interferon therapy. 96% were not aware of side effects of Interferon therapy. The awareness about the use of interferon therapy is very less among dental students. Increased awareness programs and sensitization programs should be conducted to improve the awareness levels.

*Corresponding Author

Name: Dhanraj Ganapathy
Phone: 9841504523
Email: dhanrajmganapathy@yahoo.co.in

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INTRODUCTION

Interferon is perhaps the term given to antiviral material formed by many vertebrate cells in reaction to viral infections. In 1957, Isaacs and Lindeman identified a component conferring the property of viral interruption (Isaacs and Lindenmann, 1987). The word interferon (IFN) has been created to describe the whole new substance. During the next 40 years, IFNs have been tested as treatment methods in a wide range of benign and malignant conditions. Research has established a number of mechanisms involved, in therapeutic benefits of interferon together with antiviral, innate immunity-enhancing and cytostatic functions.

IFNs are an effective therapy in oncology for a variety of firm tumours and haematological cancers, that also involve skin cancer, renal cell carcinoma, AIDS-related Kaposi tumour, follicular lymphoma, acute myeloid leukaemia, and chronic myelogenous leukemia (CML). IFN effects have been linked with negative side effects that have an effect on the standard of life of the patient and the capacity of the practitioner to efficiently manage the patient (Isaacs and Lindenmann, 1987).

IFNs were classified as alpha (α), beta (β), and gamma (Δ), referring to the former designations of leukocyte, fibroblast and immune IFN (Nomenclature and Mouse, 1980). Until lately, IFNs have been divided into two main subtypes due to its capability to connect to different receptor forms (Aguet *et al.*, 1984; Merlin *et al.*, 1985).

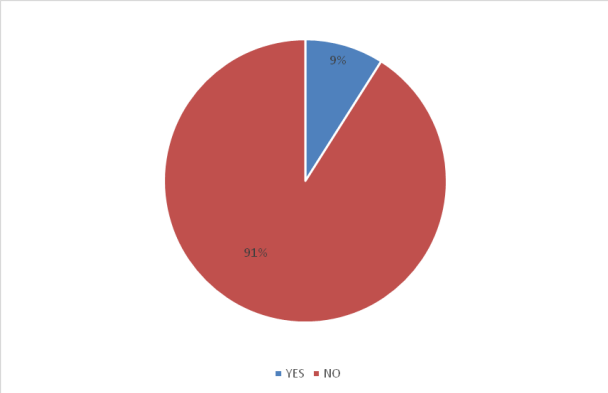

Figure 1: Awareness of medical uses of Interferon therapy

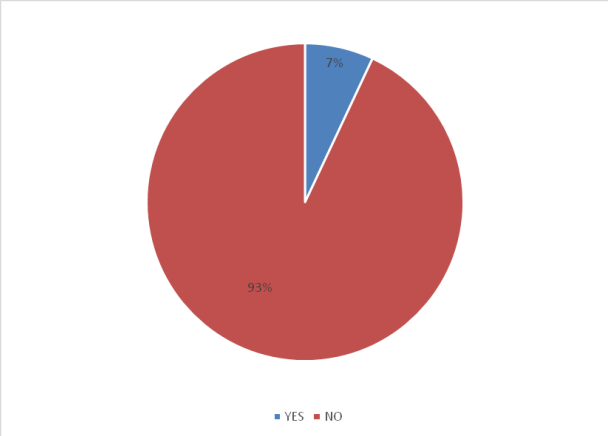

Figure 2: Awareness of anticancer activity of Interferon therapy

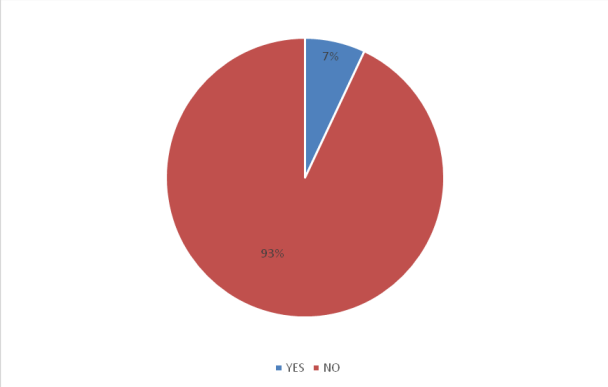

Figure 3: Awareness of mechanism of action of Interferon therapy

Type I IFNs all connect to IFN type I receptors, which also include IFN-ш, IFN-β, IFN-ш, which IFN-ш. IFN-Δ is the only type II IFN and connects to different type II receptor (Walter *et al.*, 1998).

The knowledge of IFN biochemistry, interactions, evidence for use, side-effect characteristics, as well as the monitoring of IFN toxicity will contribute to the effective usages of these substances in the treatment of cancer patients. Interferon therapy has

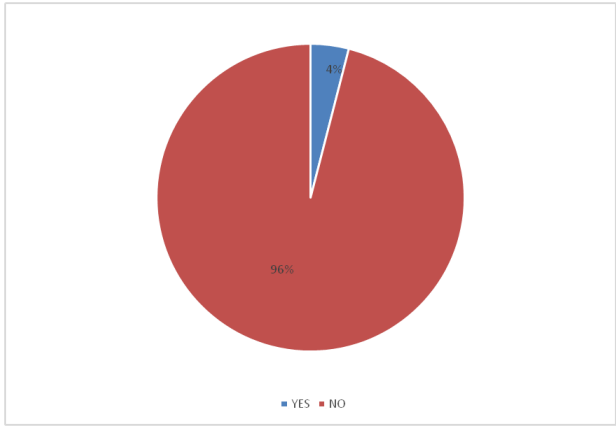

Figure 4: Awareness of side effects of Interferon therapy

the possibility for use as a treatment modality for oral cancer. Hence, this survey was performed for assessing the awareness about interferon therapy amongst dental students.

MATERIALS AND METHODS

A cross-sectional survey was performed with a self-administered questionnaire with ten queries circulated among 100 dental students. The questionnaire assessed the awareness about Interferon therapy, their medicinal uses, anticancer activity, mechanism of action and side effects. The responses were recorded and analysed.

RESULTS AND DISCUSSION

91% of the respondents were not aware of medical uses of Interferon therapy (Figure 1) .93% were not aware of anticancer activity of Interferon therapy (Figure 2) .93 % were not aware of the mechanism of action of Interferon therapy (Figure 3) .96% were not aware of side effects of Interferon therapy(Figure 4).

The IFNs have a wide range of movement and are engaged with complex associations. They show antiviral movement, sway cell digestion and separation, and have antitumor action. The antitumor impacts have all the earmarks of being because of a mix of direct antiproliferative, just as circuitous insusceptible intervened impacts.

Interferons were extremely convincing in treating Hairy Cell Leukemia. The first evidence of IFN response to hairy cell leukemia was reported in 1984 (Quesada *et al.*, 1984; Walter *et al.*, 1998). Seven patients were treated with three $\times$ 106 U of part-filtered leukocyte IFN-5-007 i.m. Day after day (QD). Three patients had a total decrease (CR), four had an incomplete decrease (PR) and decreases

were sustained for 6 to 10 months. In this way, 30 patients with leukemia were managed with IFN-5-0072a, including seven patients who had not been treated. Nine (30 per cent) CR and 17 (56 per cent) PR were confirmed by bone marrow biopsies. Both haematological reports of patients either enhanced or consolidated (Aguet *et al.*, 1984). A multicenter phase II analysis of 64 patients allocated in 1986 confirmed the efficacy of drugs for hairy cell leukemia (Golomb *et al.*, 1986).

IFN-gm IFN-gm was used as a steady stage of CML therapy. In 1987, Kurzrock et al. recorded that 6 out of 30 patients with unrelenting stage CML compensated with rIFN-gm showed CHR and oscillating degrees of cytogenetic improvement (Kurzrock *et al.*, 1987). Actually results considered that the use of IFN-5-007 and IFN-Δ mixtures has been ignored to demonstrate progress over IFN-5-007 alone and IFN-Δ is not recommended for diagnosis for CML (KIoke *et al.*, 2009).

IFN has also been commonly used for the treatment of renal cell carcinoma. Regardless of the fact that there really is no reasonable position for its use in the adjuvant environment, extensive research has been done to define its role in the management of the metastatic disease (Pyrhönen *et al.*, 1999).In 1980, Bart et al. gave an account of the restriction of B16 melanoma in vivo and in vitro via murine IFN (Bart *et al.*, 1971). IFN monotherapy in patients with metastatic melanoma induces responses in nearly 15 % of cases (Evans *et al.*, 1991).

IFN is being used in the management of HIV-related KS from 1981 (Real *et al.*, 1986). Initial medication regimens used 20 $\times$ 106 U / d doses associated with high response rates, and furthermore substantial levels of harmfulness (Ward, 1986). In subsequent investigations (Dittmer and Krown, 2010), the probability of response to therapy was attributed to CD4 controls. Patients with CD4 size greater than 400 / mm3 responded although none of those with CD4 tests of less than 150 / mm3 responded.

An adverse effect of interferons could be divided into strong and persistent indications. In an acute environment, patients experience fevers, chills and rigours, often in the 3-and 6-hour range after receiving IFN. Patients can also experience migraine headaches, myalgias, and pain. Resistance to these side effects can be triggered by the drawn out and continuous structure of IFN. Nevertheless, treatment intervals as short as a few days will lead to a regeneration of rigours and chills. Transaminitis and neutropenia may occur during an initial period of that not longer treatment duration and can be limited by modifying the IFN component. Both are decided by an infinite supply of medication. If transaminitis is not treated carefully, it can lead to deadly hepatic injury (Kirkwood *et al.*, 1996). The constant side effects encountered by patients on IFN include fatigue (70%-100% of patients), anorexia (40%-70%) and neuropsychiatric manifestations (30%). Such adverse effects tend, in all instances, to be portion-related, and absolute, to be exacerbated after some period.

IFN is a promising however not entirely comprehended anticancer specialist. Clinical preliminary studies have provided different indications for IFNs across both haematological and potent tumour sectors, despite the fact that the appropriateness of IFNs is confidential in most of the operator's uses. The symptom patterns of the IFNs are substantial and, at large doses, the decision of the IFN treatment must be considered against the near conviction of the decrease in personal gratification of the patient (Kirkwood *et al.*, 1996; Sawyer *et al.*, 1990). This study inferred the awareness about interferon therapy among dental students is poor.

CONCLUSION

The awareness about the use of interferon therapy is very less among dental students. Increased awareness programs and sensitization programs should be conducted to improve the awareness levels. Additional emphasis should be given in the curriculum and syllabi to incorporate the therapeutic benefits and upcoming research perspective of interferon therapy among dental students. This will enable and empower the students with knowledge about all the versatile applications of interferon therapy in various therapeutic applications.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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